# SLV-495/495PX/675HF/675HFPX/676HF/685HF/695HF/L40CS/L40MX/L40PA/L50CS/L50MX/L50PA/L60HFCS/L60HFMX/L60HFPA/L70HFCS/L70HFMX/L70HFPA/X5MX/X6HFMX
# RMT-V198C/V201A/V202A/V203/V203A/V203B

# SERVICE MANUAL

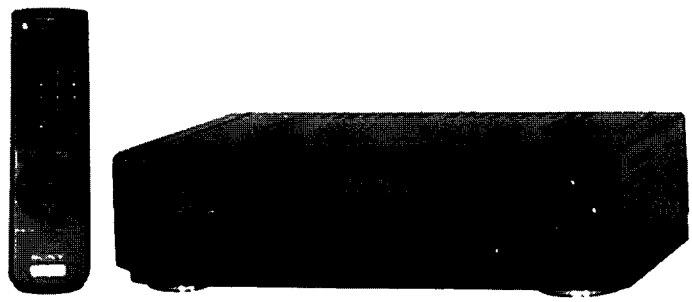

Photo : SLV-675HF

VHS

H MECHANISM

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS Ⅳ for MECHANICAL ADJUSTMENTS. (9-973-623-11)**

*US Model*
*SLV-495/675HF/676HF/685HF/695HF*

*Canadian Model*
*SLV-495/675HF/695HF*

*Mexican Model*
*SLV-L40MX/L50MX/L60HFMX/ L70HFMX/X5MX/X6HFMX*

*Panamanian Model*
*SLV-L40PA/L50PA/L60HFPA/L70HFPA*

*Chilean Model*
*SLV-L40CS/L50CS/L60HFCS/L70HFCS*

*PX Model*
*SLV-495PX/675HFPX*

## SPECIFICATIONS

### System

Format
VHS NTSC standard
Video recording system
Rotary head helical scanning FM system
Video heads
Double azimuth four heads
Video signal
NTSC color, EIA standards
Tape speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.11 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only
Maximum recording/playback time
8 hrs. in EP mode (with T-160 tape)
Fast-forward and rewind time
Approx. 3 min. (with T-120 tape)

### Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84
Antenna
75-ohm antenna terminal for VHF/UHF

### Inputs and outputs

LINE IN
VIDEO IN, phono jack
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jack
Input level. 327 mVrms
Input impedance: more than 47 kilohms
LINE OUT
VIDEO OUT, phono jack
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jack
Standard output: 327 mVrms
Load impedance: 47 kilohms
Output impedance. less than 10 kilohms

### Timer section

Clock
Quartz locked
Timer indication
12-hour cycle
Timer setting
8 programs per month (max.)
Power back-up
Built-in self-charging capacitor
Back-up duration. up to 1 hour at a time

### General

Power requirements
See next page.
Power consumption
See next page.
Operating temperature
5°C to 40°C (41°F to 104°F)
Storage temperature
–20°C to 60°C (–4°F to 140°F)
Dimensions
Approx. 355 × 102 × 280 mm (w/h/d)
(Approx. 14 × 4 1/8 × 11 1/8 inches) including projecting parts and controls
Mass
Approx. 4.0 kg (8 lb 13 oz)

### Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
Audio/video cable (3 phono to 3 phono) (1) (HiFi model)
Plug adaptor (1) (Chilean, PX models)

Design and specifications are subject to change without notice.

# VIDEO CASSETTE RECORDER

MICROFILM

992162811

SONY®

## • DIFFERENT SPECIFICATIONS LIST

| MODEL / SPECIFICATION | SLV-495 | SLV-495PX | SLV-675HF | SLV-676HF | SLV-675HFPX | SLV-685HF | SLV-695HF |
|---|---|---|---|---|---|---|---|
| AUDIO SYSTEM | MONAURAL | | HiFi-STEREO | | | HiFi-STEREO | |
| TUNER AUDIO (STEREO) SYSTEM | — | | SAP | | | SAP | |
| VCR+ SYSTEM | BUILT-IN | | — | | | BUILT-IN | |
| LINE 2 INPUT | BUILT-IN | | — | | | BUILT-IN | |
| BODY COLOR | BLACK | | BLACK | GRAY | BLACK | BLACK | |
| DUAL MODE SHUTTLE | — | | — | | | — | |
| POWER REQUIREMENTS | 120V AC 60Hz | 110-240V AC 50/60Hz | 120V AC 60Hz | | 110-240V AC 50/60Hz | 120V AC 60Hz | |
| POWER CONSUMPTION | 23W | | 24W | | | 24W | |
| REMOTE COMMANDER | RMT-V203A | | RMT-V203 | | | RMT-V203A | RMT-V202A |

| MODEL / SPECIFICATION | SLV-L40CS | SLV-L40MX | SLV-L40PA | SLV-L50CS | SLV-L50MX | SLV-L50PA | SLV-X5MX |
|---|---|---|---|---|---|---|---|
| AUDIO SYSTEM | MONAURAL | | | MONAURAL | | | |
| TUNER AUDIO (STEREO) SYSTEM | — | | | — | | | |
| VCR+ SYSTEM | — | | | — | | | |
| LINE 2 INPUT | — | | | BUILT-IN | | | |
| BODY COLOR | BLACK | | | BLACK | | | GRAY |
| DUAL MODE SHUTTLE | — | | | BUILT-IN | | | |
| POWER REQUIREMENTS | 110-240V AC 50/60Hz | 120V AC 60Hz | | 110-240V AC 50/60Hz | 120V AC 60Hz | | |
| POWER CONSUMPTION | 18W | | | 18W | | | |
| REMOTE COMMANDER | RMT-V198C | | | RMT-V201A | | | |

| MODEL / SPECIFICATION | SLV-L60HFCS | SLV-L60HFMX | SLV-L60HFPA | SLV-X6HFMX | SLV-L70HFCS | SLV-L70HFMX | SLV-L70HFPA |
|---|---|---|---|---|---|---|---|
| AUDIO SYSTEM | HiFi-STEREO | | | | HiFi-STEREO | | |
| TUNER AUDIO (STEREO) SYSTEM | SAP | | | | SAP | | |
| VCR+ SYSTEM | — | | | | — | | |
| LINE 2 INPUT | — | | | | BUILT-IN | | |
| BODY COLOR | BLACK | | | GRAY | BLACK | | |
| DUAL MODE SHUTTLE | — | | | | BUILT-IN | | |
| POWER REQUIREMENTS | 110-240V AC 50/60Hz | 120V AC 60Hz | | | 110-240V AC 50/60Hz | 120V AC 60Hz | |
| POWER CONSUMPTION | 19W | | | | 19W | | |
| REMOTE COMMANDER | RMT-V203B | | | | RMT-V201A | | |

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

**LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.**

# SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

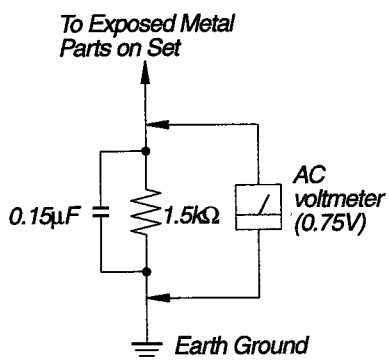


*Fig. A. Using an AC voltmeter to check AC leakage.*

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

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# SERVICE NOTE

## 1. HOW TO RETURN THE PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP MODE

1) Remove the VHS MD assembly from the machine. (Refer to section 2-4. Removal.)
2) Rotate the worm gear-1 of the cam motor beneath the MD assembly in the direction arrow Ⓐ using a screw driver tip.

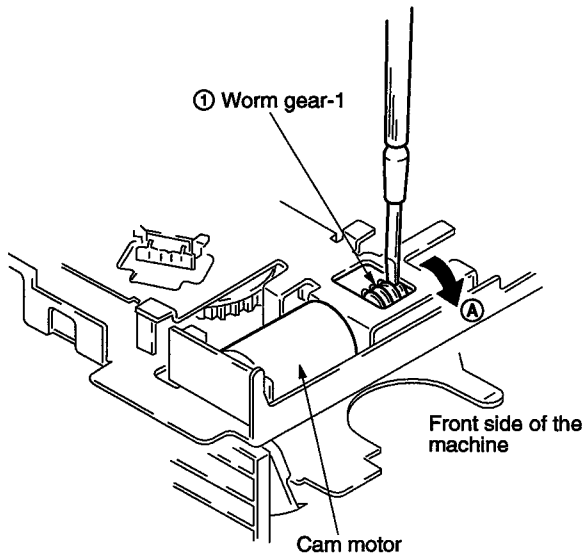


Fig. 1

## 2. HOW TO RETURN A TAPE INTO CASSETTE HALF

A tape can be rewound into a cassette half by rotating the flywheel-1 of the capstan motor in the direction of Ⓐ with hand.

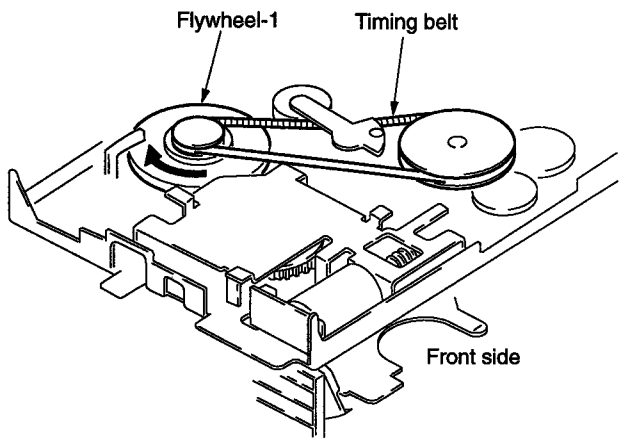


Fig. 2

## 3. HOW TO REMOVE A CASSETTE FROM A MACHINE IF A CASSETTE IS LEFT IN A MACHINE IN TROUBLE

Execute the section 2, and keep rotating the flywheel-1.

When executing section 1 to 3, take care that a tape slack should not be caught by a mechanism or a tape should not be damaged.

## 4. HOW TO REMOVE DRUM ASSEMBLY

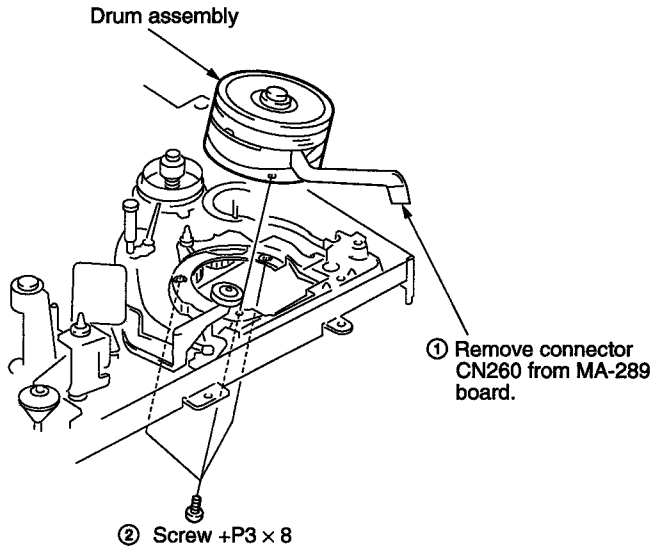


Illustration : SLV-675HF/676HF/675HFPX/685HF/695HF/
L60HFCS/L60HFMX/L60HFPA/X6HFMX/L70HFCS/
L70HFMX/L70HFPA

Fig. 3

# 5. HOW TO REPLACE A ROTARY UPPER DRUM (SLV-675HF/676HF/ 675HFPX/685HF/695HF/L60HFCS/ L60HFMX/L60HFPA/X6HFMX/ L70HFCS/L70HFMX/L70HFPA)

## 5-1. HOW TO REMOVE A ROTARY UPPER DRUM

1) Remove screw ① (+P3×8) and remove the ground shaft assembly ②. (Refer to Fig. 4.)
2) Remove soldering which is marked by arrow and remove the rotary upper drum board completely.
3) Remove two screws ③ (PSW3×8) and remove the rotary upper drum in the direction of Ⓐ. (Refer to Fig. 5.)
   If removal is difficult, remove it while rotating it slowly.

Note: If removal is difficult, check again if soldering is removed completely.

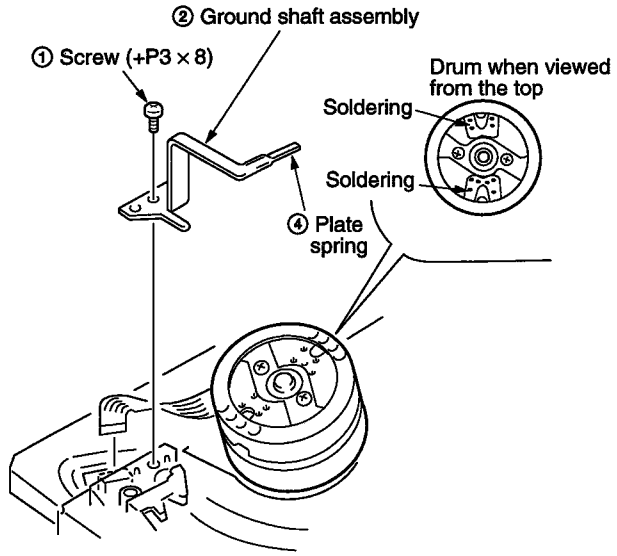


Fig. 4

## 5-2. HOW TO ATTACH A NEW ROTARY UPPER DRUM

1) Pay attention so that finger print or like must not be put when inserting a new upper drum into lower drum.
2) Align ➡ mark of the rotary upper drum board with the ⇒ mark of the rotary transformer board so that the screw hole on the upper drum and that on the lower drum are aligned. (Refer to Fig. 5.)
3) If attaching is difficult, attach a upper drum while rotating it slowly.

Note: Pay attention not to damage the video heads.
Confirm that the upper drum is inserted completely.

4) Tighten the two screws ③ (PSW3×8). (Refer to Fig. 5.)
5) Fix the earth shaft ② by tightening the screw ① (+P3×8) so that protrusion at the tip of the earth shaft contacts the center of the drum shaft.

Note: When attaching the ground shaft assembly ②, never give force to the plate spring ④.

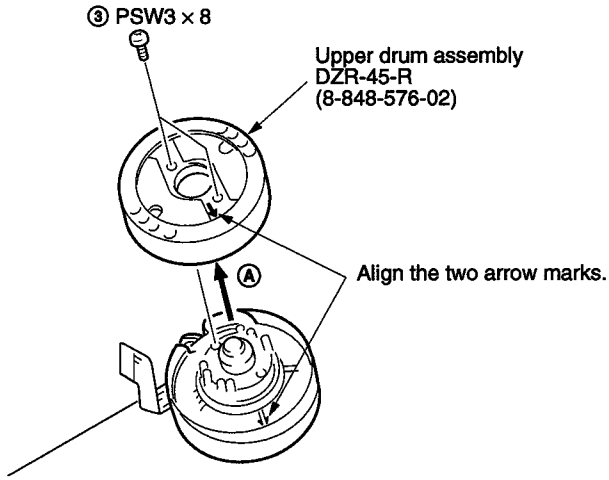


Fig. 5

9-921-628-11

Sony Corporation
Home A&V Products Company



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Published by Quality Engineering Dept.
(Osaki East)

# SECTION 1
# GENERAL

This section is extracted from the SLV-675HF/675HFPX/676HF instruction manual.

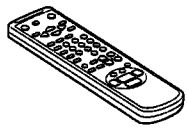


## Step 1

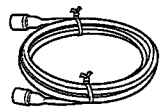
## Unpacking

Check that you have received the following items with the VCR

- Remote commander

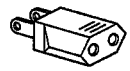


- 75-ohm coaxial cable with F-type connectors



- Size AA (R6) batteries

- Plug adaptor (SLV-675HF PX)



- Audio/video cable (3-phono to 3-phono)

If the plug supplied with your VCR does not fit your power outlet, attach the supplied adaptor to the plug



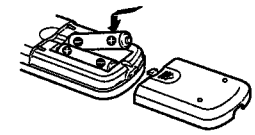
## Step 2

## Setting up the remote commander



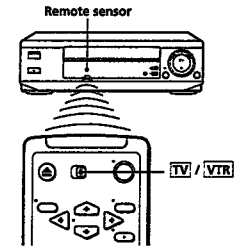
### Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment



### Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV.




| To operate | Set TV/VTR to |
|---|---|
| the VCR | VTR and point at the remote sensor on the VCR |
| a Sony TV | TV and point at the remote sensor on the TV |

**Notes**

- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage
- Do not use a new battery with an old one.
- Do not use different types of batteries

continued



***Step 2: Setting up the remote commander (continued)***

### Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VTR at the top of the remote commander to TV.

2 Hold down POWER, and enter your TV's code number(s) using the number buttons. Then release POWER.

Now you can use the POWER, VOL +/–, CH +/– and TV/VTR buttons to control your TV. You can also use the buttons marked with a dot (•) to control a Sony TV. To control the VCR, reset TV/VTR to VTR.

**Code numbers of controllable TVs**

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

| Manufacturer | Code number |
|---|---|
| Sony | 01 |
| Akai | 04 |
| AOC | 04 |
| Centurion | 12 |
| Coronado | 03 |
| Curtis-Mathes | 12 |
| Daytron | 12 |
| Emerson | 03,04,14 |
| Fisher | 11 |
| General Electric | 06,10 |
| Gold Star | 03,04,17 |
| Hitachi | 02,03 |
| J C Penny | 04,12 |

| Manufacturer | Code number |
|---|---|
| JVC | 09 |
| KMC | 03 |
| Magnavox | 03,08,12 |
| Marantz | 04,13 |
| MGA/Mitsubishi | 04,12,13,17 |
| NEC | 04,12 |
| Panasonic | 06,19 |
| Philco | 03,04 |
| Philips | 08 |
| Pioneer | 16 |
| Portland | 03 |
| Quasar | 06,18 |
| Radio Shack | 05,14 |

| Manufacturer | Code number |
|---|---|
| RCA | 04,10 |
| Sampo | 12 |
| Sanyo | 11 |
| Scott | 12 |
| Sears | 07,10,11 |
| Sharp | 03,05,18 |
| Sylvania | 08,12 |
| Teknika | 03,08,14 |
| Toshiba | 07 |
| Wards | 03,04,12 |
| Yorx | 12 |
| Zenith | 15 |

**Notes**

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander
- If you enter a new code number, the code number previously entered will be erased
- When you replace the batteries of the remote commander, the code number automatically resets to 01 (Sony) Reset the appropriate code number



## Step 3

## Hookups



### Selecting the best hookup option

There are many ways in which your VCR can be hooked up To hook up your VCR so that it works best for you, first scan through the table below Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

| If you have | Use | Refer to |
|---|---|---|
| TV that has audio/video input | Audio/video (A/V) hookup, then follow one of the hookups below. | Page 8 |
| Antenna only, no cable TV | Hookup 1 | Pages 9 and 10 |
| Cable box with many scrambled channels | Hookup 2 | Pages 11 and 12 |
| No cable box or cable box with only a few scrambled channels | Hookup 3 | Pages 13 and 14 |
| Cable box with only a few scrambled channels, using an A/B switch | Hookup 4 | Pages 15 and 16 |

After you've completed the connections, follow the instructions for setup During setup, if you need more details on the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

**Before you get started**

- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly Loose connections may cause picture distortion
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician

**Caution**

Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver

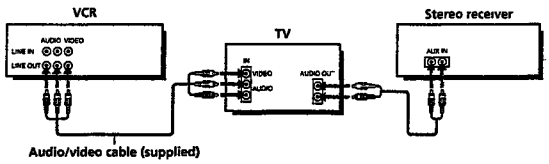
## Audio/video (A/V) hookup

Page 8

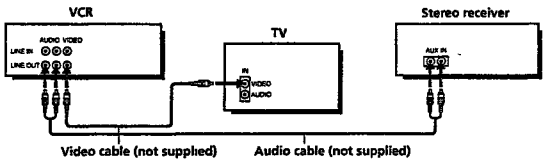
If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If you're not planning to use your VCR to record programs, you're finished setting up the VCR after you've made the connections shown on this page. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

**A Use this hookup if your TV has stereo jacks**




**B Use this hookup if your TV doesn't have stereo jacks**




**Note**

To play a tape in stereo, you must use the A/V connection.

**Note to CATV system installer (in USA)**

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.



## Hookup 1

Pages 9 and 10

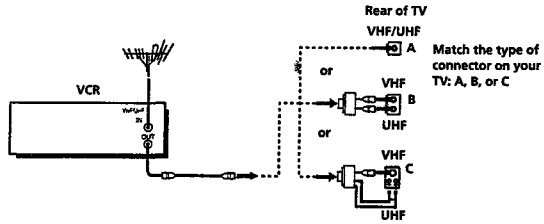


### Antenna hookup

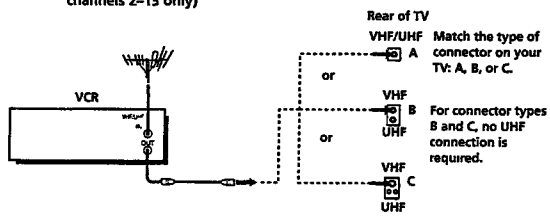
Make the following connections if you're using an antenna (if you don't have cable TV).

**A Use this hookup if you're using:**

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- Separate VHF and UHF antennas




**B Use this hookup if you're using a VHF-only antenna (you get channels 2–13 only)**




**If you cannot connect your antenna cable to the VCR directly**

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied). For details, see page 41.

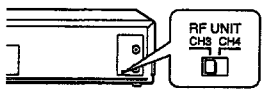




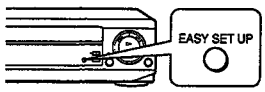
## Hookup 1: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

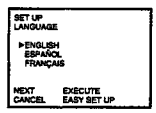
For details, see page 40. If you made A/V connections (page 8), you can skip this step.



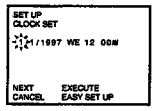

2 Press EASY SET UP on the VCR.



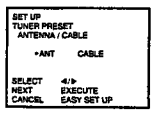

❶ The LANGUAGE menu appears. Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17.



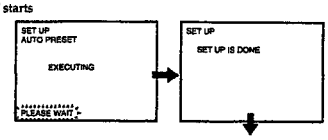

❷ The CLOCK SET menu appears. Set the clock and press EXECUTE. For details, see page 18.




❸ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 19.




❹ The AUTO PRESET starts.






## Hookup 2

Pages 11 and 12



### Cable box with many scrambled channels

**Recommended use**

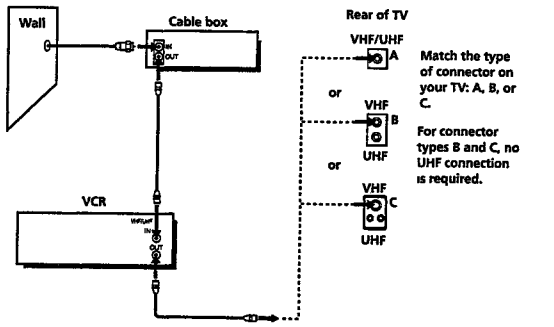
Use this hookup if your cable system scrambles all or most channels.

**What you can do with this hookup**

- Record any channel by selecting the channel on the cable box

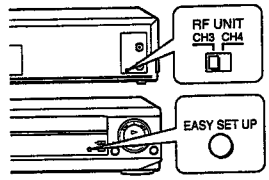
**What you can't do**

- Record one channel while watching another channel




continued

## Hookup 2: VCR setup



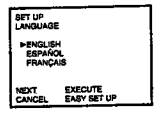

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel

For details, see page 40 If you made A/V connections (page 8), you can skip this step.

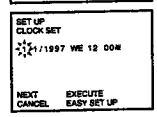
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

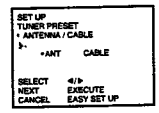
❶ The LANGUAGE menu appears Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE For details, see page 17



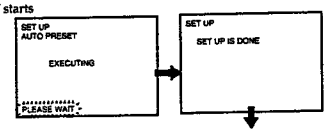

❷ The CLOCK SET menu appears Set the clock and press EXECUTE. For details, see page 18




❸ The TUNER PRESET menu appears Set ANTENNA/CABLE to ANT and press EXECUTE For details, see page 19




❹ The AUTO PRESET starts




Normal display



## Hookup 3 Pages 13 and 14

### No cable box, or cable box with only a few scrambled channels

**Recommended use**

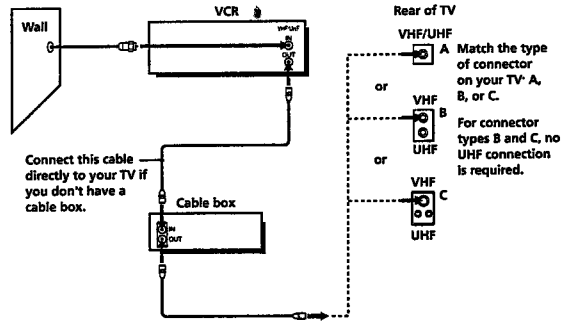
Use this hookup if you do not have a cable box Also use this hookup if your cable system scrambles only a few channels

**What you can do with this hookup**

- Record any unscrambled channel by selecting the channel on the VCR

**What you can't do**

- Record scrambled channels that require a cable box



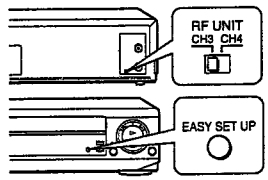

continued







## Hookup 3: VCR setup



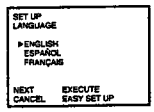

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel

For details, see page 40 If you made A/V connections (page 8), you can skip this step

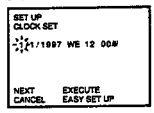
2 Turn on your cable box

3 Press EASY SET UP on the VCR

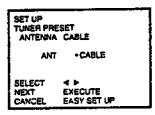
❶ The LANGUAGE menu appears Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17



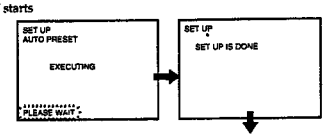

❷ The CLOCK SET menu appears. Set the clock and press EXECUTE For details, see page 18




❸ The TUNER PRESET menu appears Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 19




❹ The AUTO PRESET starts




Normal display



## Hookup 4 Pages 15 and 16

### Cable box with only a few scrambled channels, using an A/B switch

**Recommended use**

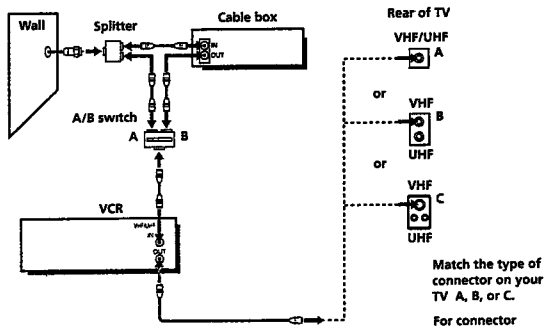
By using an A/B switch (not supplied), this hookup allows you to record both scrambled and unscrambled channels conveniently.

**What you can do with this hookup**

- Record any unscrambled channel by selecting the channel directly on the VCR (the A/B switch is set to A)
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to B)

**What you can't do**

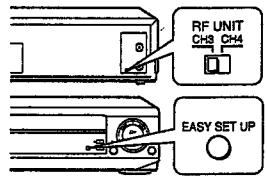
- Record one scrambled channel while watching another channel (the A/B switch is set to B)




continued

*Step 3: Hookups (continued)*

**Hookup 4: VCR setup**



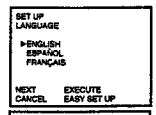

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel

For details, see page 40 If you made A/V connections (page 8), you can skip this step.

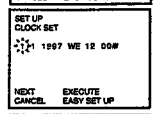
2 Set the A/B switch to "A"

3 Press EASY SET UP on the VCR.

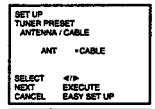
❶ The LANGUAGE menu appears. Change the on-screen display language to Spanish (ESPAÑOL) or French (FRANÇAIS) if desired, and press EXECUTE. For details, see page 17



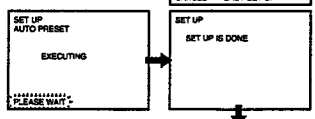

❷ The CLOCK SET menu appears Set the clock and press EXECUTE. For details, see page 18.




❸ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 19




❹ The AUTO PRESET starts




Normal display

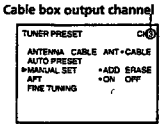
Cable box output channel

4 Preset the cable box output channel (usually 2, 3 or 4) For details, see page 21.

❶ Press MENU and select TUNER PRESET

❷ Enter the cable box output channel

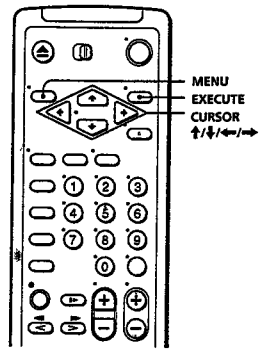
❸ Set MANUAL SET to ADD and press EXECUTE






## Selecting a language

You can change the on-screen display language.




1 •MENU

•CURSOR

•EXECUTE

Press MENU, then press CURSOR ↑/↓ to move the cursor (▶) to LANGUAGE and press EXECUTE.

When using the EASY SET UP procedure, skip this step

2 •CURSOR

•EXECUTE

Press CURSOR ↑/↓ to select ENGLISH, ESPAÑOL, or FRANÇAIS, then press EXECUTE.

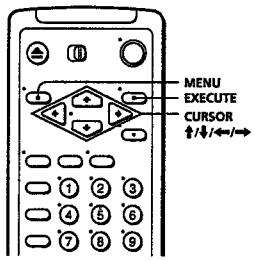


## Setting the clock

Set the time and date to use the timer feature for recording programs.

**Before you start...**

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4) If your TV is connected to the VCR using A/V connections, set the TV to video input
- Press TV/VTR to display the VTR indicator in the VCR's display window.



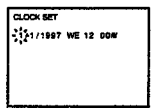

1 •MENU

•CURSOR

•EXECUTE

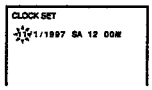
Press MENU, then press CURSOR ↑/↓ to move the cursor (▶) to CLOCK SET and press EXECUTE

When using the EASY SET UP procedure, skip this step




2 •CURSOR

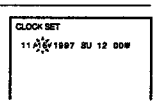
Press CURSOR ↑/↓ to set the month.




3 •CURSOR

Press CURSOR → to flash the day and press CURSOR ↑/↓ to set the day

The day of the week is set automatically.




4 •CURSOR

Set the year, hour and minutes in the same way as the day.

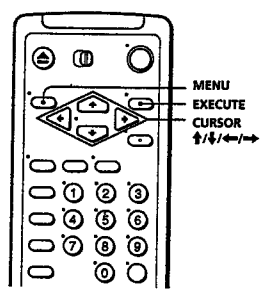
5 •EXECUTE

Press EXECUTE to start the clock.



## Presetting channels

This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125 First, we recommend that you preset the receivable channels in your area using automatic presetting Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.




**Before you start...**

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4) If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.

### Presetting all receivable channels automatically

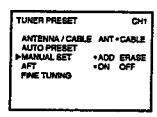
1 •MENU

•CURSOR

•EXECUTE

Press MENU, then press CURSOR ↑/↓ to move the cursor (▶) to TUNER PRESET and press EXECUTE.

When using the EASY SET UP procedure, skip this step




2 •CURSOR

Press CURSOR ↑/↓ to select ANTENNA/CABLE.

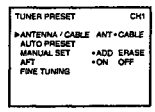
continued

## *Presetting channels (continued)*

**3** • CURSOR

• To preset cable TV channels

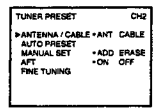
Press CURSOR ⬅/➡ to set ANTENNA/CABLE to CABLE




• CURSOR

• To preset VHF and UHF channels

Press CURSOR ⬅/➡ to set ANTENNA/CABLE to ANT

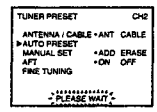



**4** • CURSOR

• EXECUTE

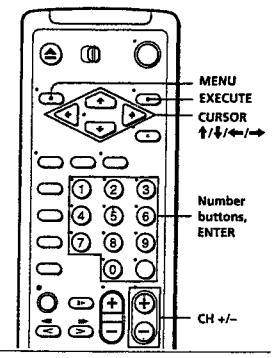
Press CURSOR ⬆/⬇ to select AUTO PRESET, then press EXECUTE

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen



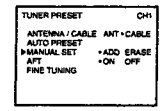



## Presetting/disabling channels manually




**1** • MENU • EXECUTE

Press MENU and select TUNER PRESET, then press EXECUTE



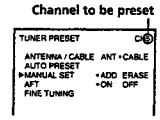

**2**

• To preset a channel

1 Press the number buttons to enter the channel number, then press ENTER

2 Press CURSOR ⬅/➡ to set MANUAL SET to ADD

Channel to be preset



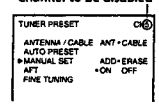

• CH

• To disable a channel

1 Press CH +/– to select the channel number

2 Press CURSOR ⬅/➡ to set MANUAL SET to ERASE

Channel to be disabled




**3** • EXECUTE

Repeat step 2 to preset or disable channels as required, then press EXECUTE

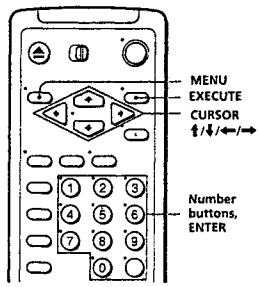
continued



## *Presetting channels (continued)*

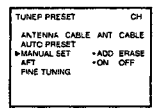
### If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you can also use the manual tuning function




**1** • MENU • EXECUTE

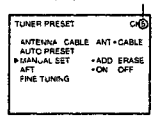
Press MENU and select TUNER PRESET, then press EXECUTE




**2**

Press the number buttons to select the channel you want to fine-tune, then press ENTER

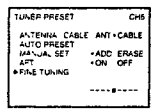
Selected channel




**3** • CURSOR

Press CURSOR ⬆/⬇ to select FINE TUNING

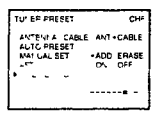
The fine tuning meter appears




**4** • CURSOR • EXECUTE

Press CURSOR ⬅, ➡ to adjust to a clearer picture, then press EXECUTE

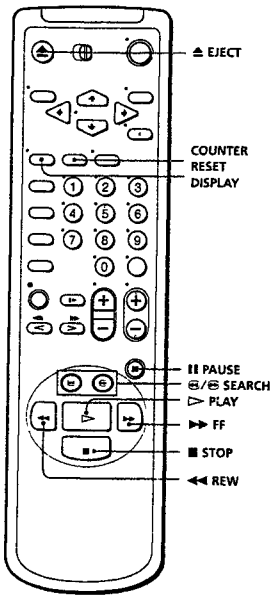
Note that the AFT setting switches to OFF







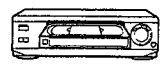

## Playing a tape




**1** Turn on your TV and set it to the video channel

**2** Insert a tape

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed



continued

### *Playing the tape (continued)*

**3** PLAY ▷ Press ▷ PLAY

When the tape reaches the end, it will rewind automatically

**Additional tasks**

| To | Press |
|---|---|
| Stop play | ■ STOP |
| Pause play | ❚❚ PAUSE |
| Resume play after pause | ❚❚ PAUSE or ▷ PLAY |
| Search forward | ▶▶ FF or SEARCH during playback |
| Search backward | ◀◀ REW or SEARCH during playback |
| Fast-forward the tape | ▶▶ FF during stop |
| Rewind the tape | ◀◀ REW during stop |
| Eject the tape | ⏏ EJECT |

**To use the time counter**

At the point on the tape that you want to find later, press COUNTER RESET The counter in the display window resets to "0H00M00S" Search for the point afterwards by referring to the counter

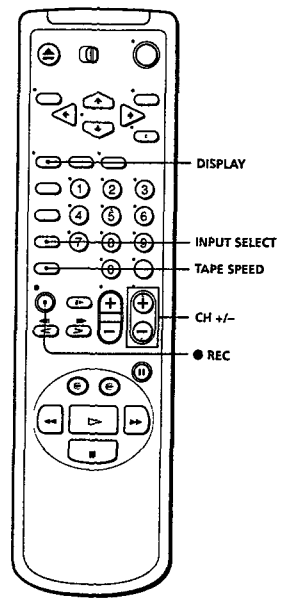
To display the counter on the TV screen, press DISPLAY

**Notes**

- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed
- The counter resets to "0H00M00S" whenever a tape is reinserted
- The counter stops counting when it comes to a portion with no recording



## Recording TV programs




**1** Turn on your TV and set it to the video channel

To record from a cable box, turn it on

**2** Insert a tape with its safety tab in place

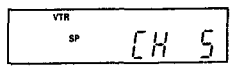
continued



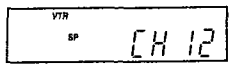


### *Recording TV programs (continued)*

**3** INPUT SELECT Press INPUT SELECT until a channel number appears in the display window

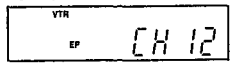



**4** +CH Press CH +/– to select the channel you want to record




**5** TAPE SPEED Press TAPE SPEED to select the tape speed, SP or EP

EP provides recording time three times as long as SP, however, SP produces better picture and audio quality



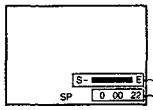

**6** ●REC Press ● REC to start recording

**To stop recording**

Press ■ STOP

**To check the remaining tape length**

Press DISPLAY The white bar indicates the approximate length of tape remaining The remaining time indicator also appears in the display window




Remaining tape length
Time counter

To check the remaining time of a T-140, T-180 or longer tape, set TAPE SELECT in the ADVANCED OPTIONS menu to "180" (For details, see page 37 )

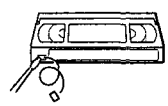


**To watch another TV program while recording**

1 Press TV/VTR to turn off the VTR indicator in the display window
2 If the TV is connected to the VCR's LINE OUT jacks, set the TV to TV input, if not, skip this step
3 Select another channel on the TV

**To save a recording**

To prevent accidental erasure, break off the safety tab as illustrated To record on a tape again, cover the tab hole with adhesive tape



Safety tab

**Tips**

- To select a channel, you can use the number buttons on the remote commander Enter the channel number, then press ENTER
- You can select a video source from the LINE IN jacks using INPUT SELECT
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape
- If you don't want to watch TV while recording, you can turn off the TV When using a cable box, make sure to leave it on

**Notes**

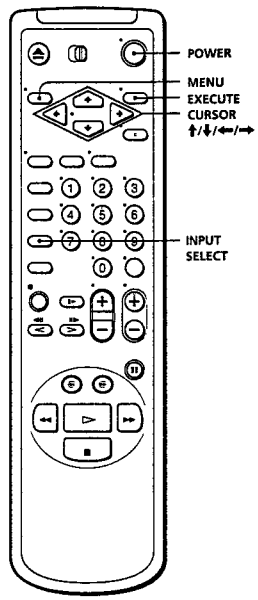
- The remaining tape length may not be indicated accurately for short tapes such as T-20 or T-30, or tapes recorded in the LP mode
- The display doesn't appear during still (pause) mode, search mode or slow-motion playback
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY

# Recording TV programs using the timer

You can preset up to eight programs at a time

**Before you start ..**

- Check that the VCR clock is set to the correct time
- Turn on your TV and set it to the video channel When using a cable box, turn it on
- Insert a tape with its safety tab in place Make sure the tape is longer than the total recording time

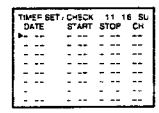



**1** • MENU

Press MENU and select TIMER SET/CHECK, then press EXECUTE

• CURSOR

• EXECUTE





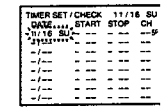

**2** • CURSOR

Set the date, start and stop times, channel number and tape speed

1 Press CURSOR → to flash each item in turn

2 Press CURSOR ↑/↓ to set each item

To correct a setting, press CURSOR ← to return to that setting and reset




To record the same program every day or the same day every week, press CURSOR ↓ while the date is flashing For details, see "Daily/weekly recording" on this page

To record from a source connected to the LINE IN jacks, press INPUT SELECT to display "L" in the "CH" position

**3** • CURSOR

Press CURSOR → to confirm the setting

The cursor (▶) appears at the beginning of the line To enter another setting, move the cursor to the next line and repeat step 2

**4** • EXECUTE

Press EXECUTE

**5** • POWER

Press POWER to turn off the VCR

The TIMER indicator on the VCR lights up and the VCR stands by for recording When using a cable box, leave it on

**To stop recording**

To stop the VCR while recording, press ■ STOP

**Daily/weekly recording**

In step 2 above, press CURSOR ↓ to select the recording pattern Each time you press CURSOR ↓, the indication changes as shown below

**the current date → SU-SA → MO-SA → MO-FR → EVERY SA → . → EVERY MO → EVERY SU → 1 month later → (dates count down) → the current date**

**Tips**

- To set the channel, you can also use the CH+/– or number buttons
- To set the tape speed, you can also use TAPE SPEED

continued





***Recording TV programs using the timer (continued)***

**To use the VCR after setting the timer**

To use the VCR before a timer recording begins, just press POWER The TIMER indicator turns off and the VCR switches on Remember to press POWER to reset the VCR in timer recording standby after using the VCR

You can also do the following tasks while the VCR is recording

- Reset the counter
- Display tape information on the TV screen
- Check the timer settings
- Watch another TV program

**To lock the VCR after setting the timer (Child Lock)**

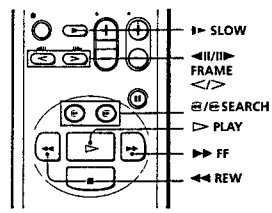
Hold down POWER on the VCR until the VCR beeps The VCR turns off and the ⊶ indicator appears in the display window The VCR will not work except for timer recording

To unlock the VCR, hold down POWER on the VCR until the VCR beeps The VCR turns on and the ⊶ indicator disappears from the display window





# Playing/searching at various speeds




| Playback options | Operation |
|---|---|
| Fast-forward/rewind | During stop press ▶▶ FF or ◀◀ REW |
| View the picture during fast-forward or rewind | During fast-forward, keep pressing ▶▶ FF During rewind keep pressing ◀◀ REW |
| Play at high speed | During playback or pause, press SEARCH or SEARCH To change direction press > or < |
| Play in slow motion | During playback or pause, press SLOW To change direction, press > or < |
| Play frame by frame | During pause, press FRAME or FRAME Hold the button down to play one frame each second |
| Play in reverse | During playback press < |
| Rewind and start play | During stop, press ▷ PLAY on the VCR while pressing ◀◀ REW on the VCR |

**To resume normal playback**

Press ▷ PLAY

**Tip**

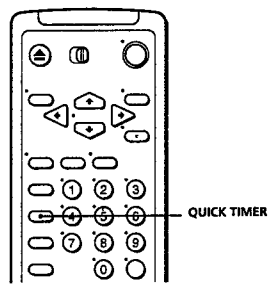
- Adjust the picture using the TRACKING +/– buttons on the VCR if
  - Streaks appear while playing in slow motion
  - The picture shakes while pausing

**Notes**

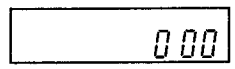
- The sound is muted during these operations
- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed
- The picture may have snow
  - when playing at high speed in reverse
  - when playing in reverse slow motion
  - when playing in reverse

# Recording TV programs using the quick timer

After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration

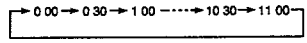



1 While recording, press QUICK TIMER once




2 Press QUICK TIMER repeatedly to set the duration

Each press advances the time in increments of 30 minutes




The duration decreases minute by minute to 0 00, then the VCR stops recording and turns off automatically

**To extend the duration**

Press QUICK TIMER repeatedly to set to the new duration

**To stop the VCR while recording**

Press ■ STOP

## Using the quick timer during stop mode

1 Press QUICK TIMER

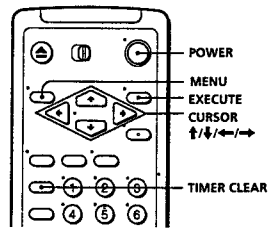
2 Press CH +/– or INPUT SELECT to select the channel you want to record

3 Press QUICK TIMER repeatedly to set the recording duration

The recording starts



# Checking/ changing/ canceling timer settings



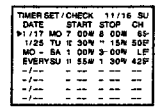

**Before you start ..**

- Turn on your TV and set it to the video channel

1 Press POWER to turn on the VCR

2 Press MENU and select TIMER SET/CHECK

- If you want to change a setting, go on to the next step
- If you do not need to change the settings, press EXECUTE, then turn off the VCR to return to recording standby




3 Press CURSOR ↑/↓ to select the setting you want to change or cancel

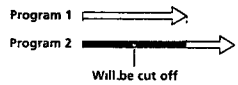
- To change the setting, press CURSOR ←/→ to flash the item you want to change, and press CURSOR ↑/↓ to reset it Then, press CURSOR → repeatedly until the cursor (▶) appears at the beginning of the line
- To cancel the setting, press TIMER CLEAR

4 Press EXECUTE

If any timer settings remain, turn off the VCR to return to recording standby

**When the timer settings overlap**

The program that starts first has priority and the second program starts recording only after the first program has finished If the programs start at the same time, the program listed first in the menu has priority






# Recording stereo and bilingual programs

## Recording stereo programs

This VCR automatically receives and records stereo programs When a stereo program is received, the STEREO indicator lights up If there is noise in the stereo program, set AUTO STEREO in the ADVANCED OPTIONS menu to OFF The sound will be recorded in monaural (on both hi-fi and normal audio tracks) but with less noise For details, see page 37

## Recording bilingual programs

Normally, this VCR records only the main sound When a SAP (Second Audio Program) is received, the SAP indicator lights up To record only SAP sound, set TUNER AUDIO in the ADVANCED OPTIONS menu to SAP For details, see page 37

## Selecting the sound while playing

Press AUDIO MONITOR to select the desired sound (The sound being recorded will not change )

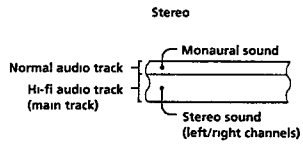
**Stereo program**

| To listen to | Indicator on the TV screen |
|---|---|
| Stereo | STEREO |
| Left channel | L |
| Right channel | R |
| Monaural sound on the normal audio track* | No indicator appears |

* Usually the mixed sound of left and right channels

## How sound is recorded on a video tape

The VCR records sound onto two separate tracks Hi-fi audio is recorded onto the main track along with the picture Monaural sound is recorded onto the normal audio track along the edge of the tape




**Notes**

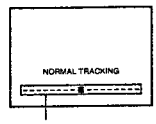
- To play a tape in stereo, you must use the A/V connections
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting

# Adjusting the picture

## Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the tracking indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. In this case, manually adjust the tracking.

Press the TRACKING +/– buttons on the VCR to display the tracking meter. The distortion should disappear as you press one of the two buttons (the indicator lights up). To resume automatic tracking adjustment, eject the tape and reinsert it.




Tracking meter

## About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the ADVANCED OPTIONS menu (with the APC indicator in the display window lit).

### APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

### APC recording

Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

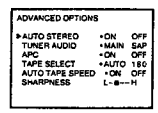
**Notes**

- The auto tracking adjustment cannot be used on tapes recorded in the LP mode on other VCRs.
- The APC function doesn't work if the tape speed is automatically changed from the SP to EP mode during a timer recording, unless the tape has been recorded in the EP mode with the APC function.
- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyzes the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ● REC to have the VCR analyze the tape. After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is canceled.



# Changing menu options

1 Press MENU and select ADVANCED OPTIONS.




2 Press CURSOR ↑/↓ to select the option to change, then press CURSOR ←/→ to change the setting.

3 Press EXECUTE to return to the original screen.

**Menu choices**

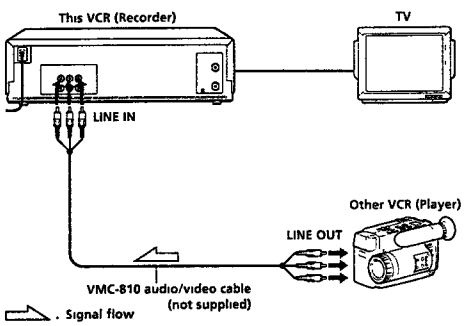
Initial settings are indicated in bold print.

| Menu option | Set this option to |
|---|---|
| AUTO STEREO | **ON** to receive stereo programs, OFF to reduce noise, the sound changes to monaural |
| TUNER AUDIO | **MAIN** to record the main sound, SAP to record the SAP (Second Audio Program) sound |
| APC | **ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality, OFF to switch off APC |
| TAPE SELECT | **AUTO** or 180 (when using a T-140, T-180 or longer tape) to select the tape length and display the remaining time correctly |
| AUTO TAPE SPEED | **ON** to change the timer recording tape speed automatically to the EP mode when the remaining tape becomes shorter than the recording time, OFF to keep the set tape speed |
| SHARPNESS | L (Low) through H (High) to adjust the sharpness of the picture. L to turn off the sharpness control |



# Editing with another VCR

## How to hook up to record on this VCR




## How to hook up to a stereo system

Connect LINE IN AUDIO on this VCR to the audio output jacks on the stereo system, using the RK-C510KS audio cable (not supplied).

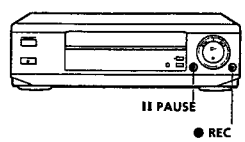
**Notes**

- Make sure you connect the plugs to jacks of the same color.
- If the other VCR is a monaural type, use a connecting cable such as Sony VMC-910MS.
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.

## Operation (when recording on this VCR)

**Before you start editing**

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT on the remote commander to display "L" in the display window.
- Press TAPE SPEED on the remote commander to select the tape speed, SP or EP.




1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

2 Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press ❚❚ PAUSE.

3 Press ● REC on this VCR and set it to recording pause.

4 To start editing, press the ❚❚ PAUSE buttons on both VCRs at the same time.

**To stop editing**

Press the ■ STOP buttons on both VCRs.

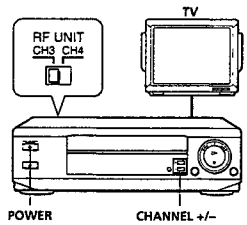
**Note**

- If you start recording following the procedure above, the VCR won't start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyzes the tape. Then when you start recording in step 4, press ❚❚ PAUSE immediately after the APC indicator stops flashing. If you press ❚❚ PAUSE before the APC indicator stops flashing, the APC function is canceled.

# General setup information

## Setting the RF unit

When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR




1 Set the RF UNIT switch on the rear of the VCR to CH 3 or CH 4, whichever channel is not used in your area If both are used, set the switch to either channel

2 Press POWER to turn on the VCR

3 Press TV/VTR on the remote commander to turn on the VTR indicator in the VCR's display window

4 Press CHANNEL +/– to display a channel number in the display window Select an active channel number in your area

5 Turn on your TV and set it to the channel you selected in step 1 (channel 3 or 4)

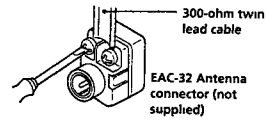
The selected TV channel broadcast appears on the TV screen If the channels change when you press CHANNEL +/–, you have made the correct setting

Whenever you use the VCR, set the TV to the channel selected in step 1



## Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR



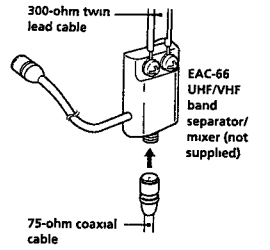

1 Loosen the screws on the antenna connector

2 Wind the twin leads around the screws on the antenna connector

3 Retighten the screws

## Attaching a UHF/VHF band mixer

When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR




1 Loosen the screws on the mixer

2 Wind the twin leads around the screws on the mixer

3 Retighten the screws

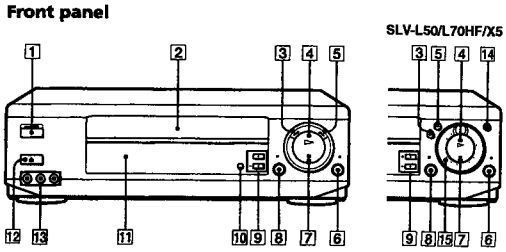
4 Connect the 75-ohm coaxial cable to the mixer



# Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details

## Front panel




1 POWER switch/indicator

2 Tape compartment

3 ◀◀ REW button (23, 31)

4 ▷ PLAY button (23, 31)

5 ▶▶ FF button (23, 31)

6 ● REC button (26, 39)

7 ■ STOP button (23, 26)

8 ❚❚ PAUSE button (23, 39)

9 CHANNEL/TRACKING +/– buttons (26, 31, 36)

10 EASY SET UP button (10, 12, 14, 16)

11 Remote sensor (5)

12 ⏏ EJECT button (23)

13 LINE-2 IN AUDIO/VIDEO jacks (SLV-495/L50/X5)
LINE-2 IN AUDIO L/R/VIDEO jacks (SLV-685HF/695HF/L70HF)

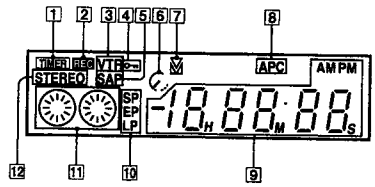
14 JOG button (SLV-L50/L70HF/X5)

15 CLICK JOG SHUTTLE ring (SLV-L50/L70HF/X5)





## Display window




1 TIMER indicator (29)

2 REC (recording) indicator

3 VTR indicator (27)

4 🔑 (Child Lock) indicator (30)

5 SAP indicator (34)

6 Remaining time indicator (26) (EXCEPT SLV-L40/L50/L60HF/L70HF/X5/X6HF)

7 ▣ (tracking) indicator (36)

8 APC indicator (36)

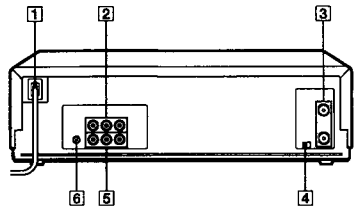
9 Time counter/clock/line/channel indicator (24, 26)

10 Tape speed indicator (26)

11 Tape indicator

12 STEREO indicator (34)

### Rear panel



1 AC power cord

2 LINE IN or LINE-1 IN AUDIO/VIDEO jacks (Mono model) LINE IN or LINE-1 IN AUDIO L/R/VIDEO jacks (38) (HiFi model)

3 VHF/UHF IN/OUT connectors (9, 11, 13, 15)

4 RF UNIT switch (40)

5 LINE OUT AUDIO L/R/VIDEO jacks (8)

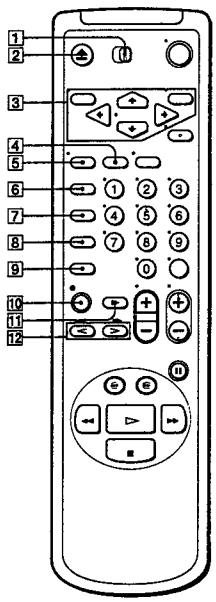
6 CABLE BOX CONTROL CTRL S OUT jack (SLV-495/685HF/695HF)

continued



***Index to parts and controls (continued)***

### Remote commander



1 TV / VTR remote control switch (5)

2 ⏏ EJECT button (23)

3 Menu operation buttons (17, 37)

MENU button
CURSOR ↑/↓/←/→ buttons
EXECUTE button

4 COUNTER RESET button (24)

5 DISPLAY button (26)

6 TIMER CLEAR button (33)

7 QUICK TIMER button (32)

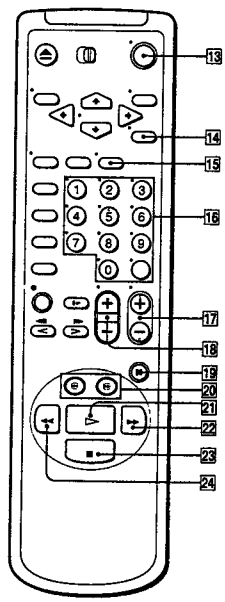
8 INPUT SELECT button (27, 29, 39)

9 TAPE SPEED button (26)

10 ● REC button (26, 39)

11 I► SLOW button (31)

12 ◄II/II►FRAME</> buttons (31)



13 POWER switch (29)

14 AUDIO MONITOR button (34)

15 TV/VTR button (27)

16 Channel number/ENTER buttons (21, 22)

17 CH +/– buttons (21, 26)

18 VOL +/– buttons

19 II PAUSE button (23)

20 ⏮/⏭ SEARCH buttons (23, 31)

21 ▷ PLAY button (23, 31)

22 ▶▶ FF button (23, 31)

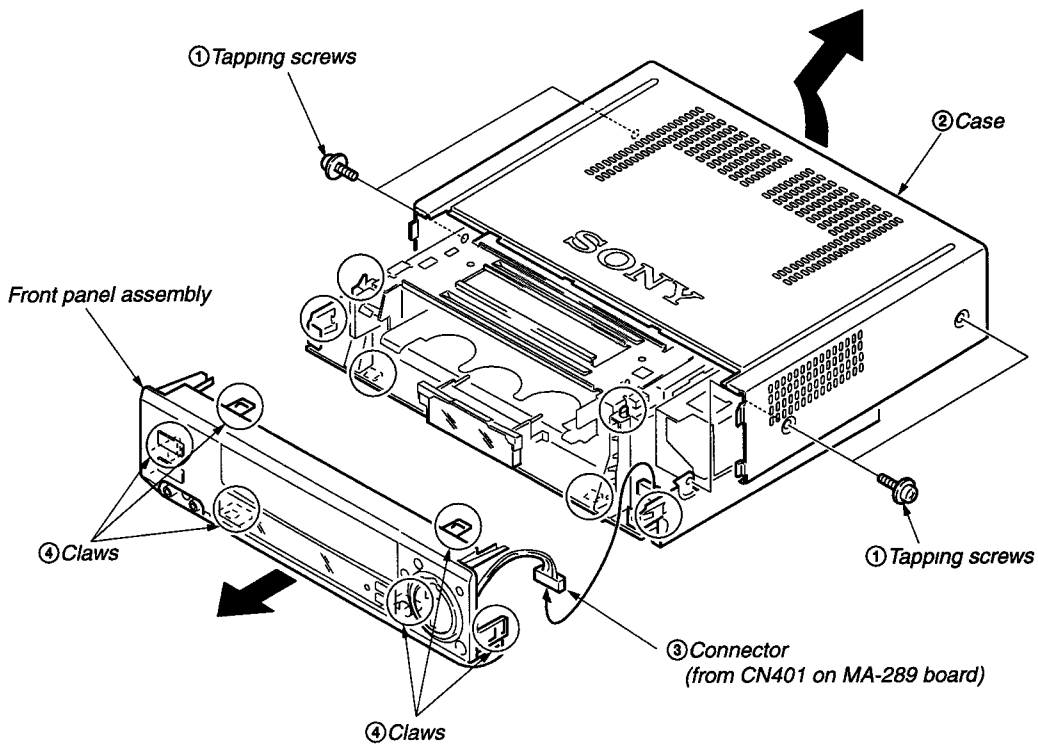
23 ■ STOP button (23, 26)

24 ◀◀ REW button (23, 31)

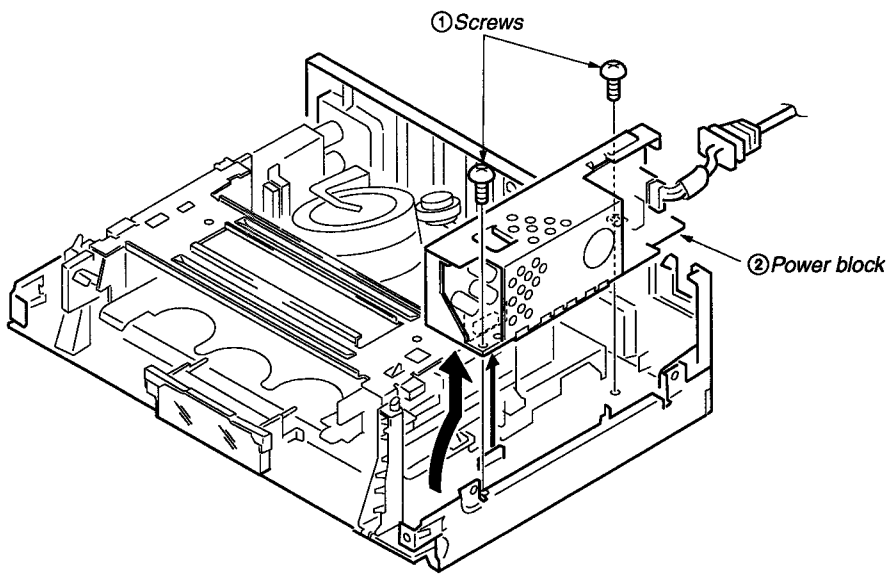
# SECTION 2
# DISASSEMBLY

NOTE : Follow the disassembly procedure in the numerical order given.

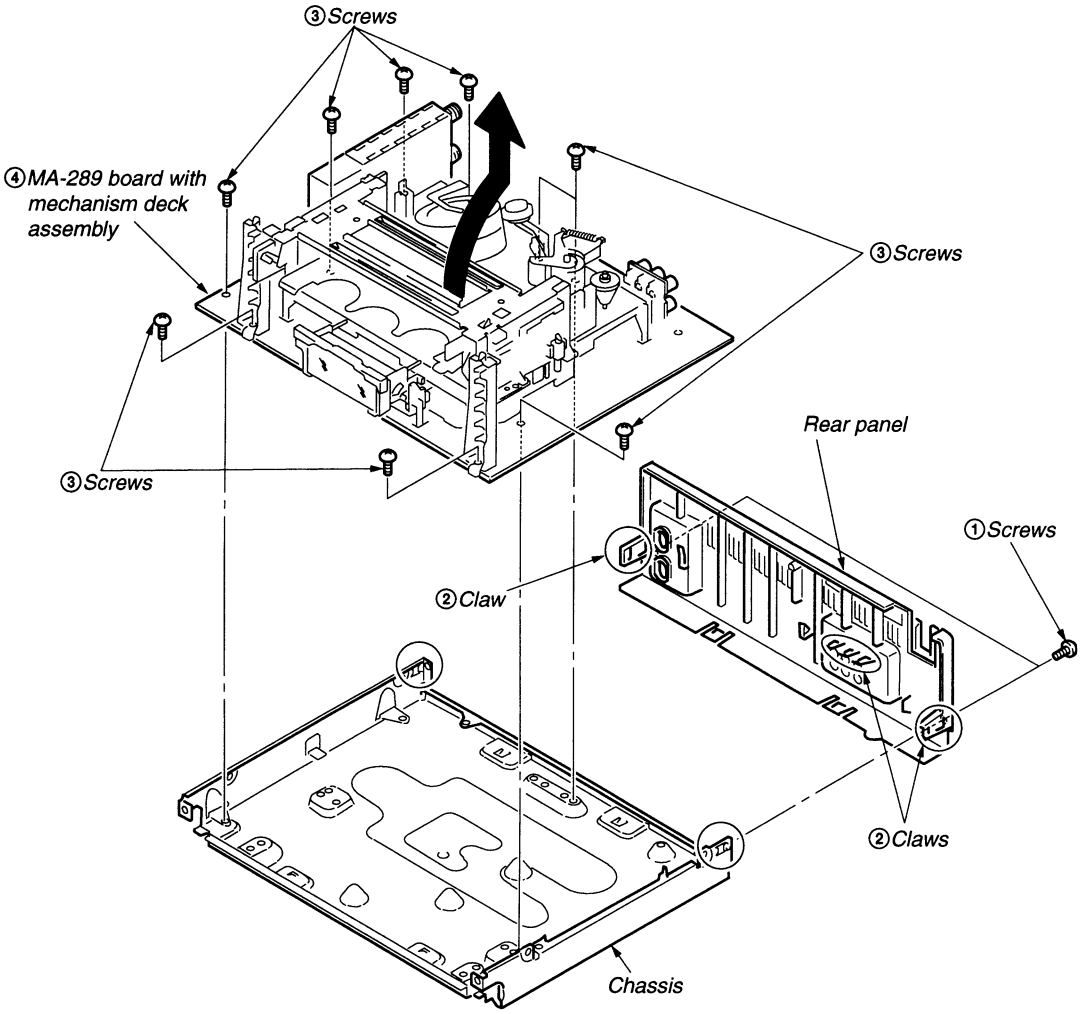
## 2-1. CASE AND FRONT PANEL ASSEMBLY



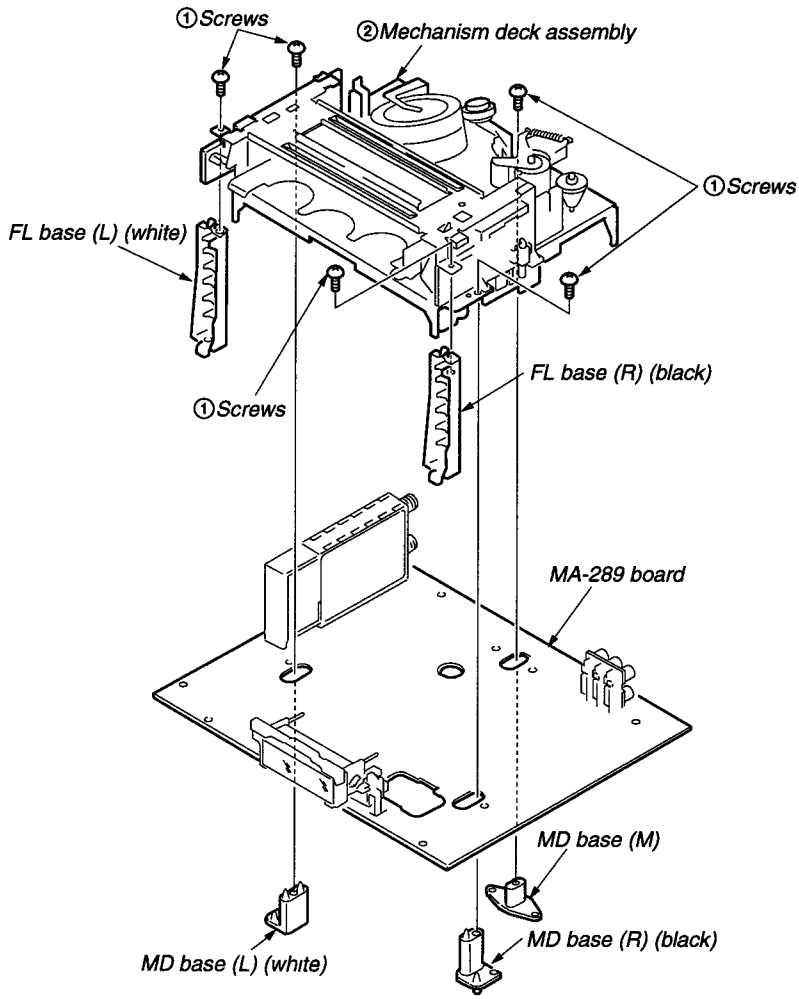

## 2-2. POWER BLOCK



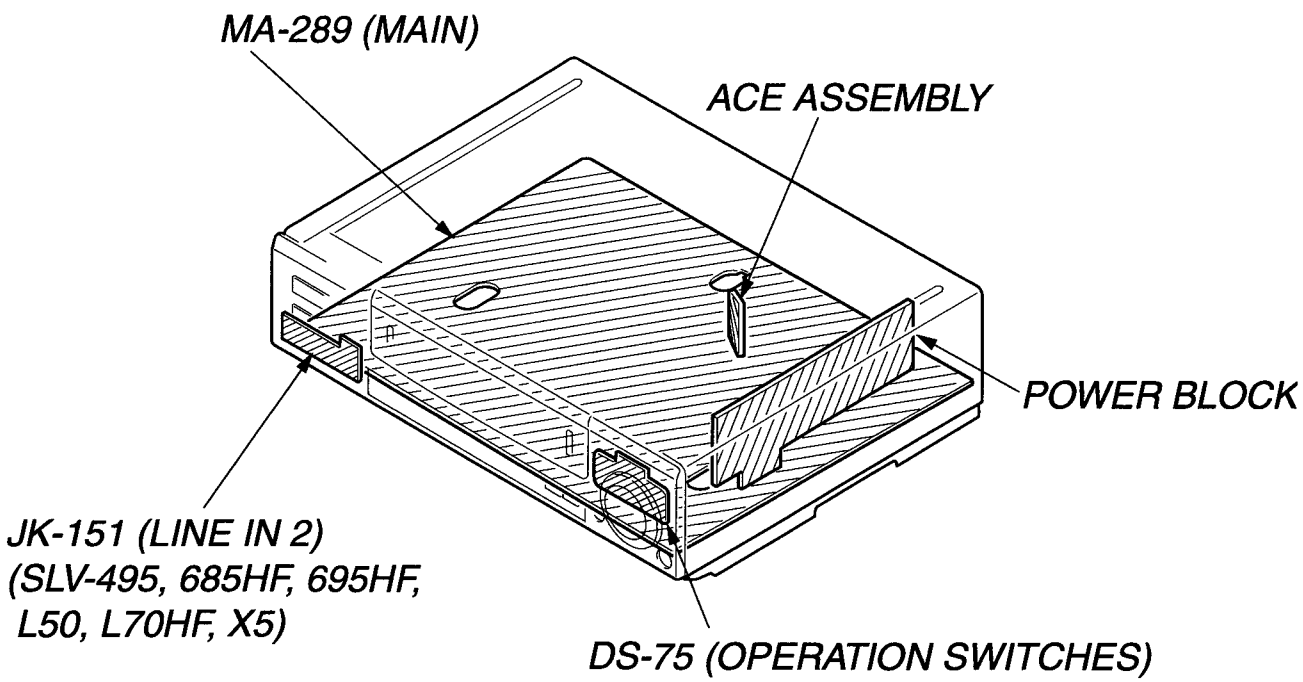
## 2-3. MA-289 BOARD WITH MECHANISM DECK ASSEMBLY



## 2-4. MECHANISM DECK ASSEMBLY

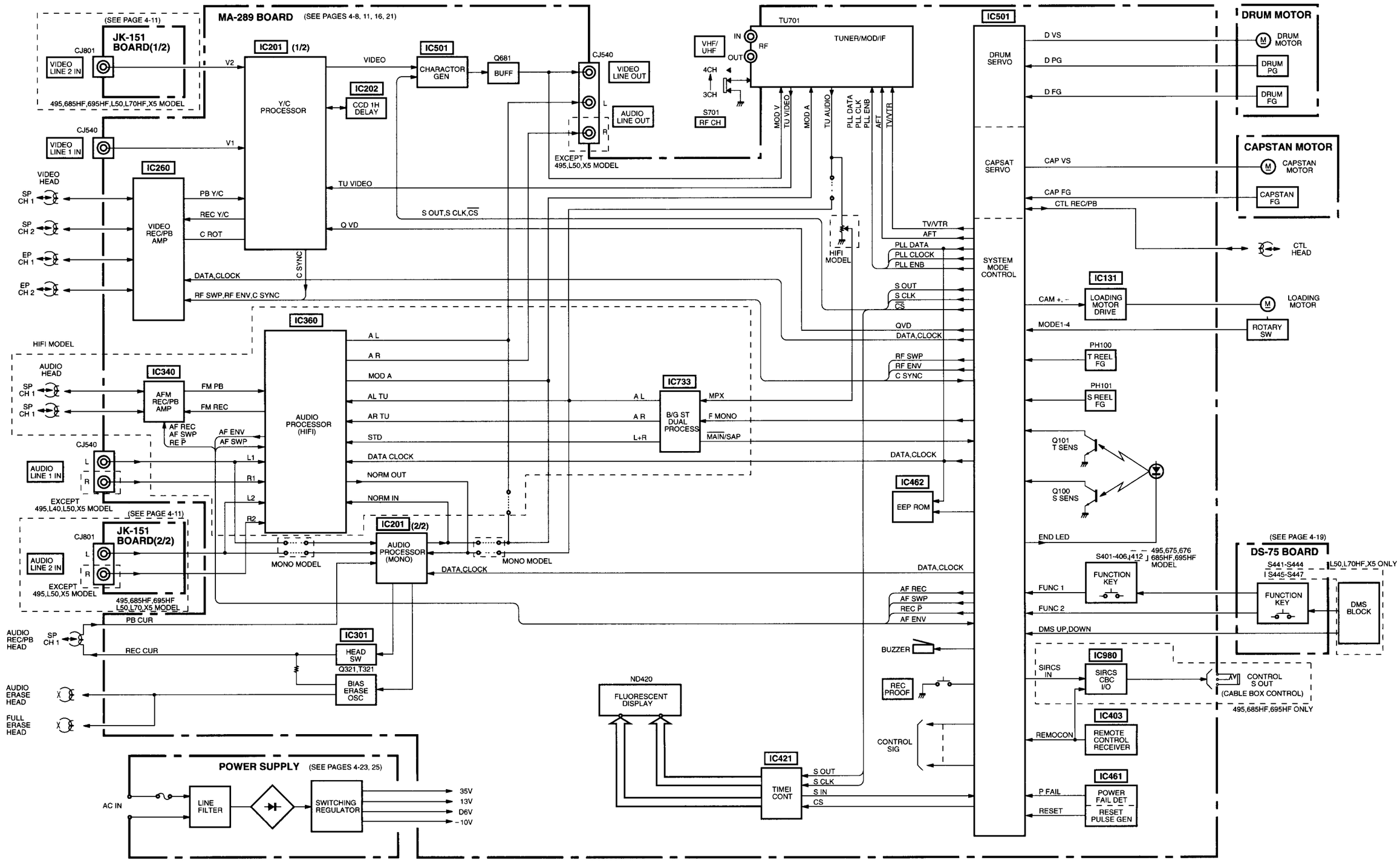



## 2-5. CIRCUIT BOARDS LOCATION

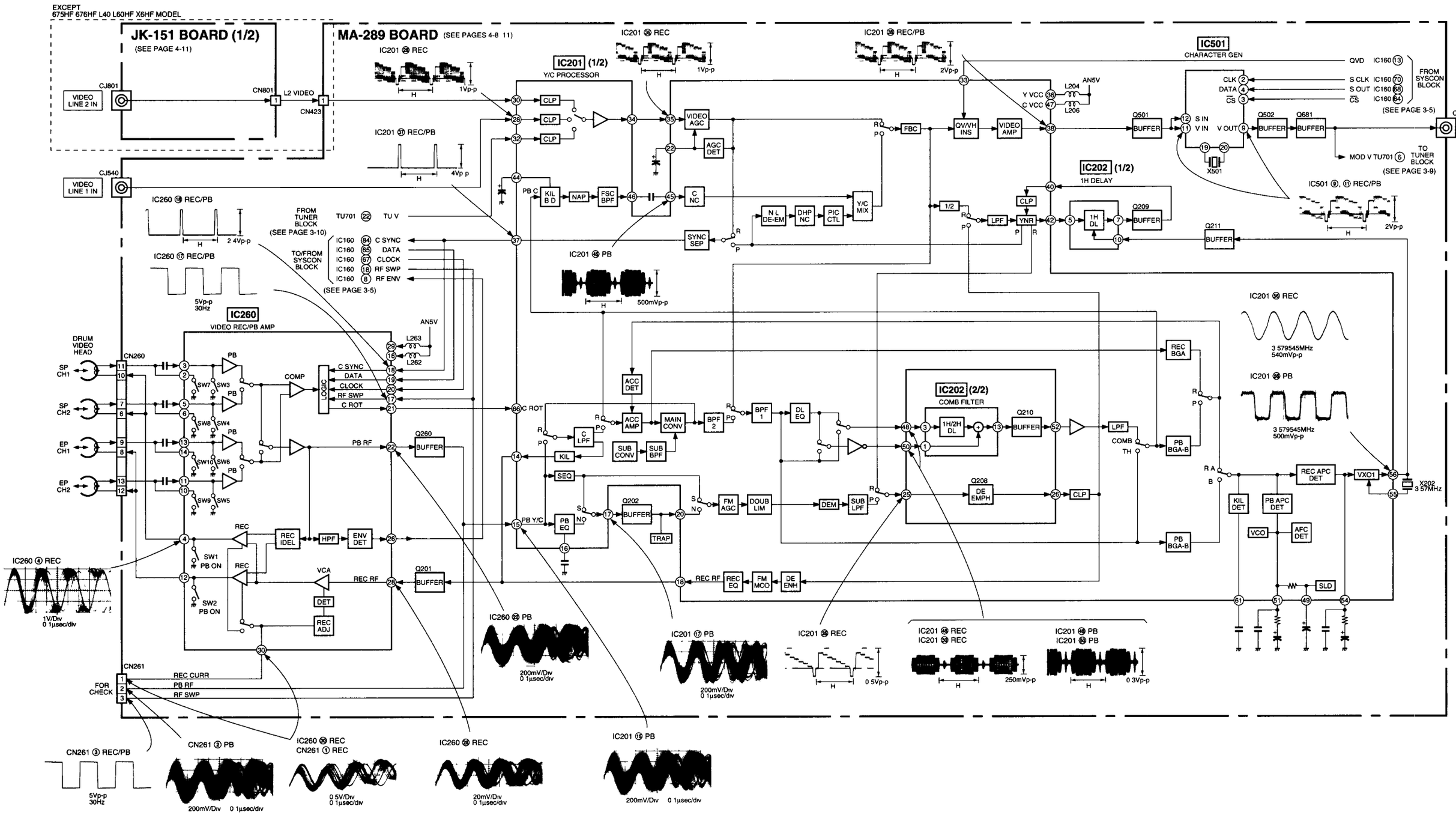


# SECTION 3
# BLOCK DIAGRAMS

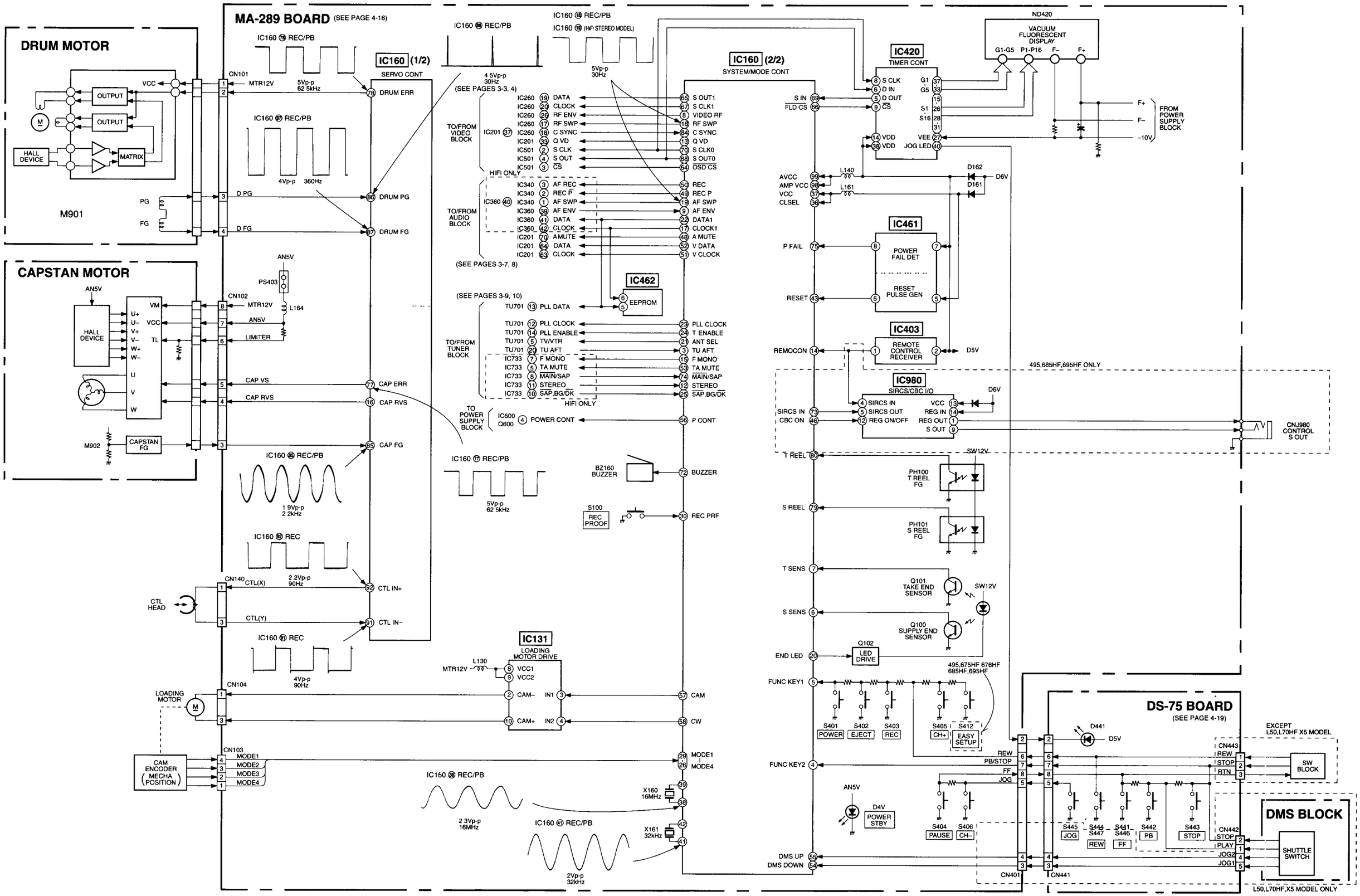
## 3-1. OVERALL BLOCK DIAGRAM



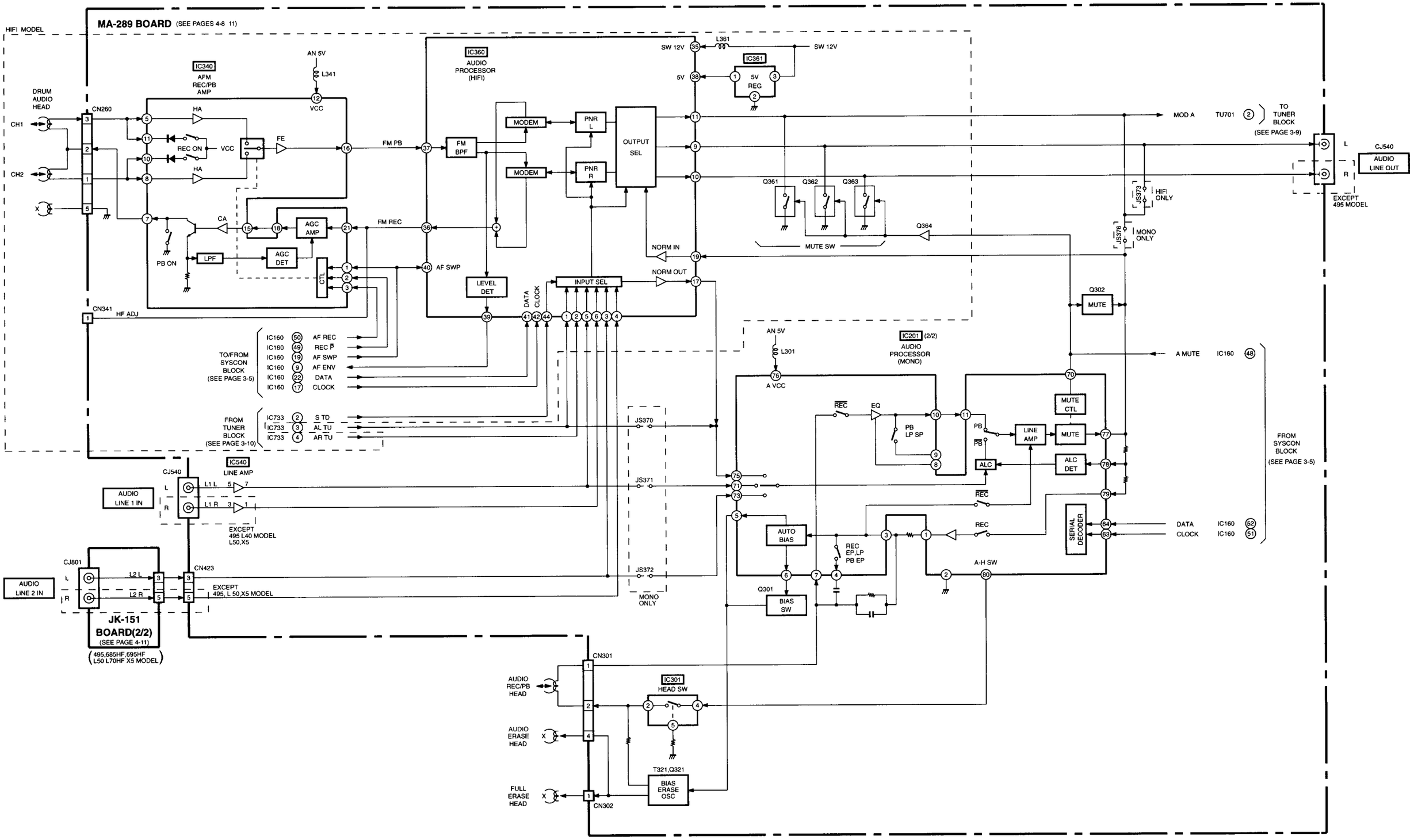
## 3-2. VIDEO BLOCK DIAGRAM



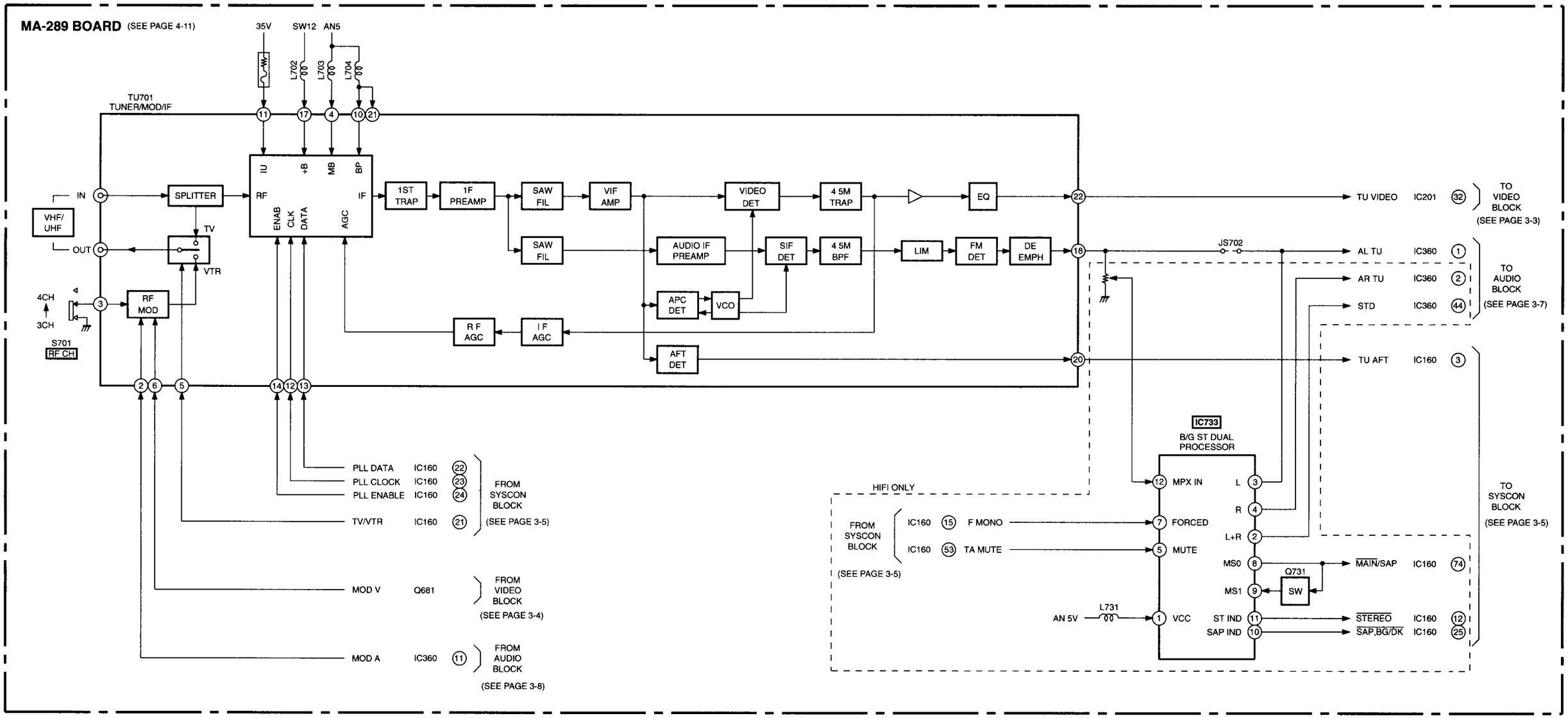
## 3-3. SERVO, SYSTEM CONTROL BLOCK DIAGRAM



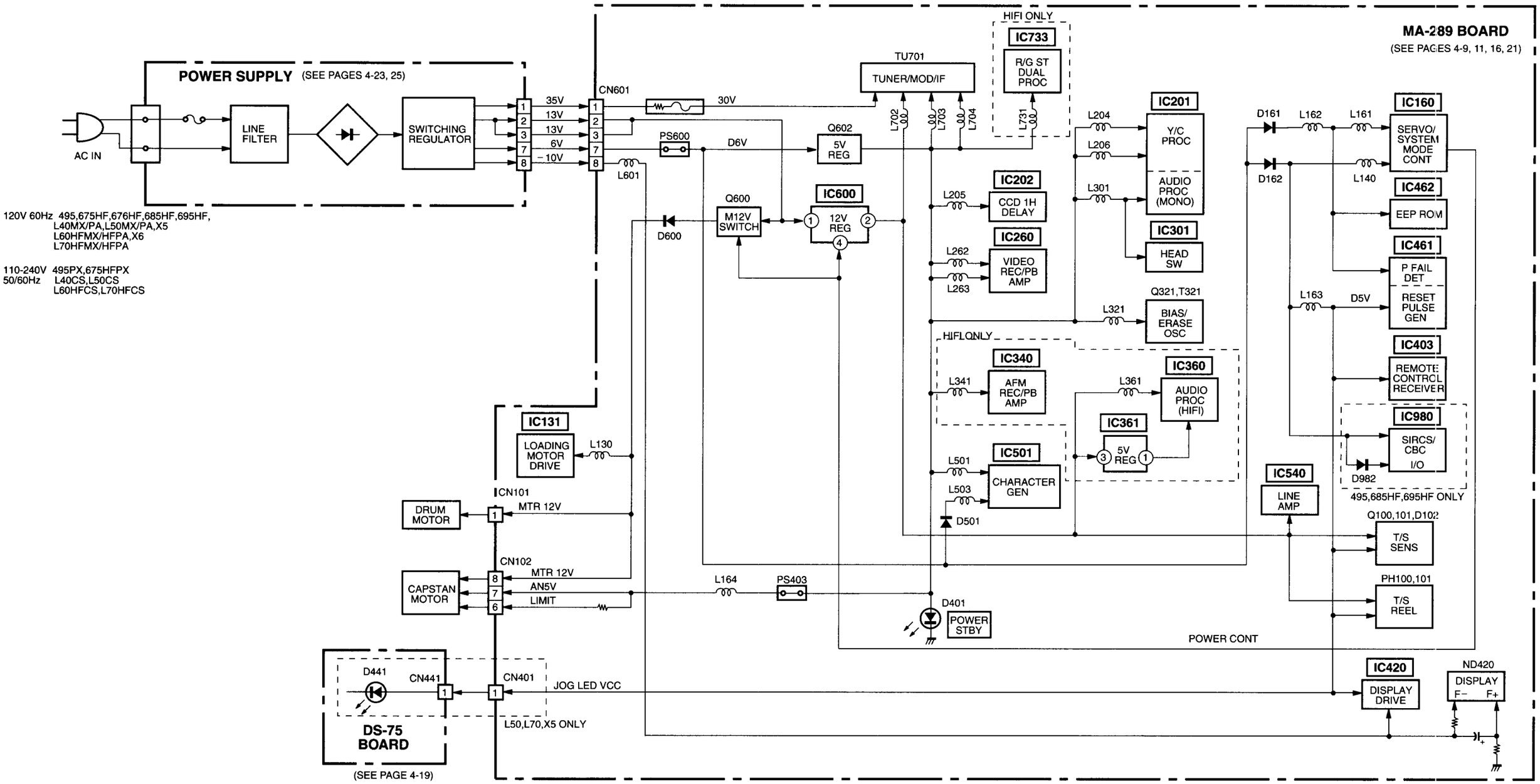
## 3-4. AUDIO BLOCK DIAGRAM



## 3-5. TUNER BLOCK DIAGRAM

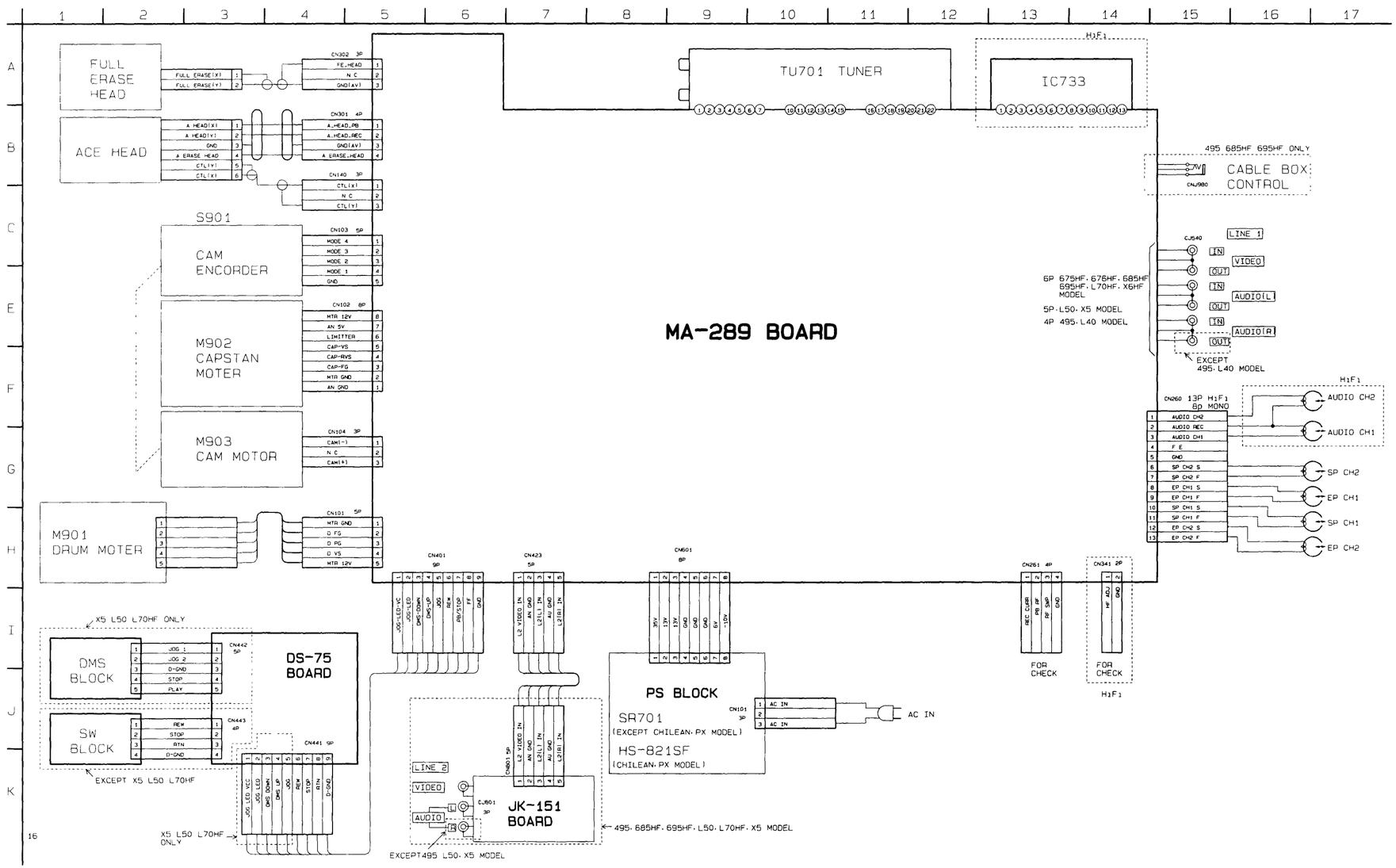


## 3-6. POWER SUPPLY BLOCK DIAGRAM



# SECTION 4
# PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

## 4-1. FRAME SCHEMATIC DIAGRAM




**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**
**(In addition to this, the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ▬▬ : Pattern from the side which enables seeing.

| **Caution :** | |
|---|---|
| Pattern face side. (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Pattern face side: (Component Side) | parts on the parts face side seen from the parts face are indicated |

- **For schematic diagrams.**
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistor are in ohms, 1/4W unless otherwise noted Chip resistor are 1/10W unless otherwise noted kΩ: 1000Ω, MΩ, · 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF · μ μF. 50V or less are not indicated except for electrolytics and tantalums.
- ▭ . panel designation
- △ internal component.
- ▬▬ · B+Line. *
- ▬▪▬ : B+Line *
- ▰▰ : IN/OUT direction of (+,–) B LINE *
- Circled numbers refer to waveforms. *
- Readings are taken with a color-bar signal input.
- Voltage are dc between ground and measurement points *
- Rradings are taken with a dijital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

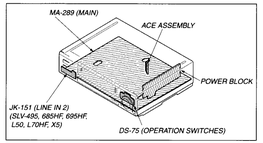
When indicating parts by reference number, please include the board name.

- * : indicated by the color red.

**MA-289 (MAIN) PRINTED WIRING BOARD**
— Ref. No. MA-289 Board, 1,000 Series —

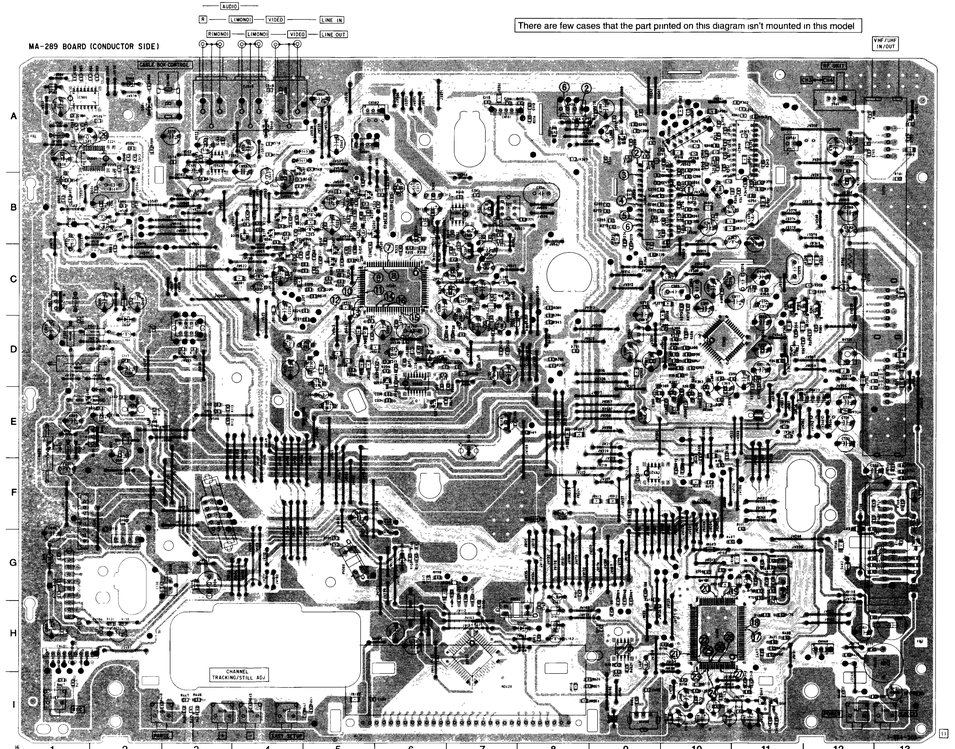
**MA-289 BOARD**

| | | | |
|---|---|---|---|
| CJ540 | A-4 | IC403 | I-9 |
| CNJ980 | A-3 | | |
| CN101 | A-7 | IC420 | H-7 |
| CN102 | D-3 | IC461 | H-9 |
| CN103 | F-3 | IC462 | F-9 |
| | | IC501 | A-2 |
| CN104 | G-3 | IC540 | A-3 |
| CN140 | H-12 | | |
| CN260 | A-10 | IC600 | G-2 |
| CN261 | A-8 | IC733 | G-13 |
| CN301 | A-5 | IC980 | A-1 |
| CN302 | A-5 | | |
| CN341 | A-11 | PH100 | G-5 |
| CN401 | H-1 | PH101 | H-8 |
| CN423 | E-12 | | |
| CN601 | F-1 | | |
| | | Q100 | E-11 |
| | | Q101 | E-2 |
| D102 | E-7 | Q102 | E-7 |
| D161 | H-8 | Q201 | B-5 |
| D162 | H-8 | Q202 | B-6 |
| D301 | C-7 | | |
| D302 | D-8 | Q208 | C-5 |
| | | Q209 | E-6 |
| D361 | D-11 | Q210 | D-6 |
| D401 | I-13 | Q211 | D-6 |
| D501 | B-1 | Q260 | A-9 |
| D540 | A-4 | | |
| D600 | E-2 | Q301 | C-7 |
| | | Q302 | C-7 |
| D601 | C-2 | Q321 | B-7 |
| D602 | D-2 | Q361 | C-12 |
| D702 | A-12 | Q362 | C-11 |
| D980 | A-2 | | |
| D981 | A-2 | Q363 | C-12 |
| | | Q364 | D-11 |
| D982 | A-1 | Q501 | B-2 |
| | | Q502 | A-2 |
| | | Q600 | E-2 |
| IC131 | G-1 | | |
| IC160 | H-10 | Q601 | E-2 |
| IC201 | C-6 | Q602 | C-1 |
| IC202 | D-6 | Q681 | A-4 |
| IC260 | B-9 | Q731 | G-13 |
| IC301 | B-7 | | |
| IC340 | A-11 | | |
| IC360 | D-10 | | |
| IC361 | D-9 | | |

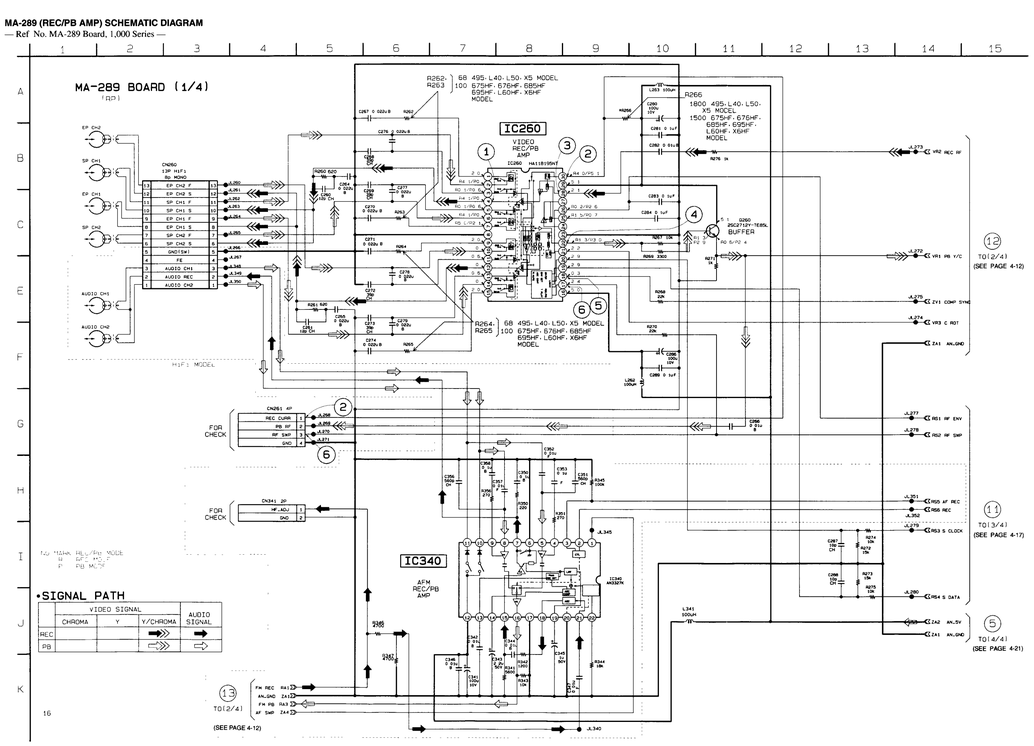



MA-289 BOARD (CONDUCTOR SIDE)

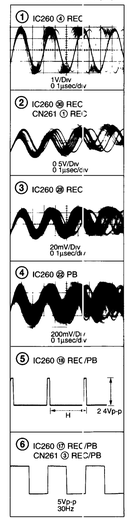
There are few cases that the part printed on this diagram isn't mounted in this model




**MA-289 (REC/PB AMP) SCHEMATIC DIAGRAM**
— Ref. No. MA-289 Board, 1,000 Series —



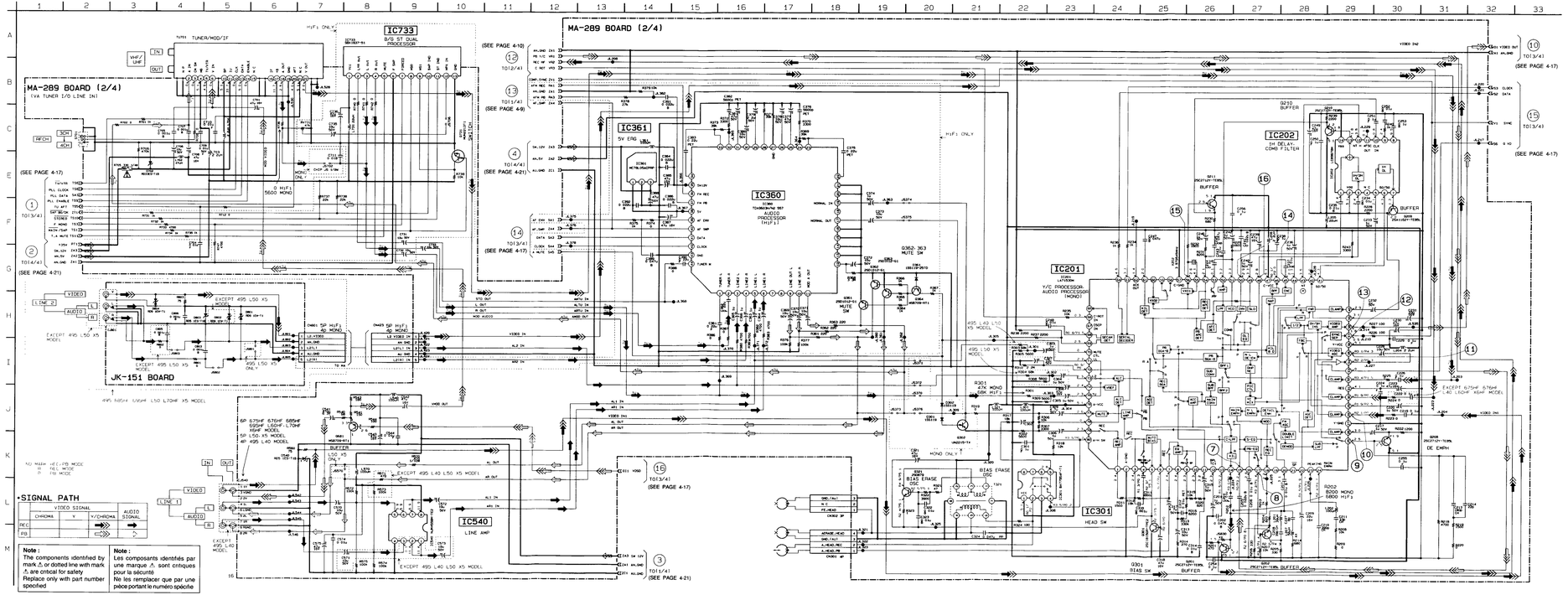

**MA-289** BOARD (1/3)



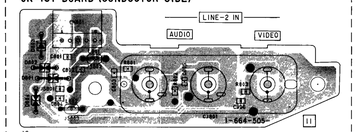
**MA-289 (VIDEO, TUNER, AUDIO), JK-151(LINE IN 2) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM**

— Ref No MA-289 Board, 1,000 Series, JK-151 Board; 2,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model

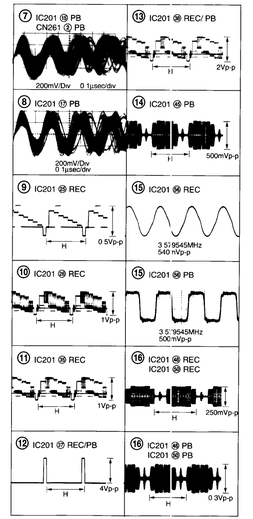


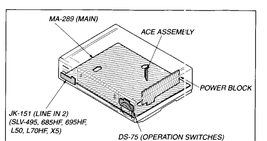

**JK-151 BOARD (CONDUCTOR SIDE)**



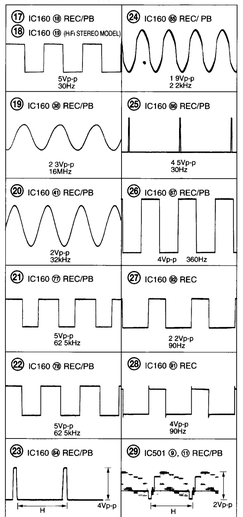

SLV-495/685HF/695HF/L50/L70HF/X5

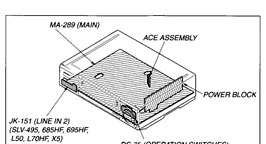
**MA-289 BOARD (2/3)**



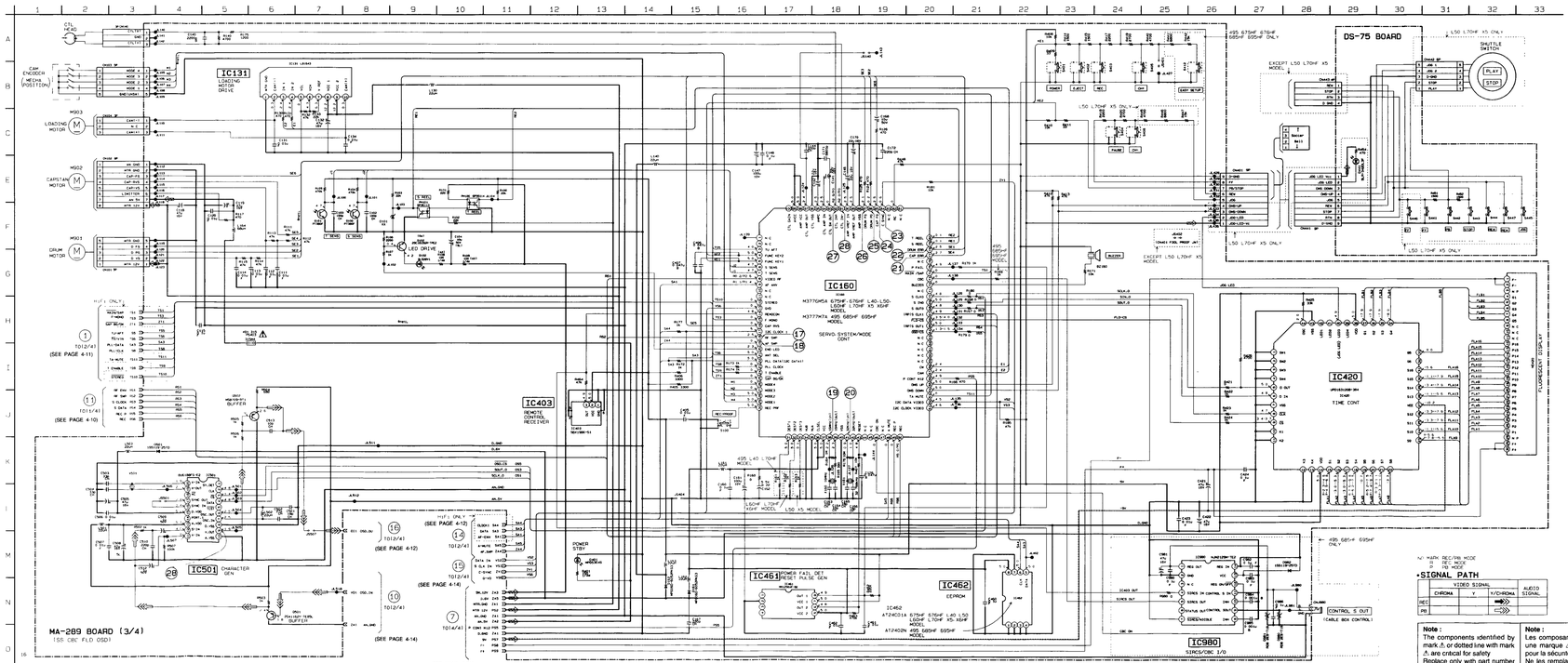
## MA-289 BOARD (3/3)




**MA-289 (SERVO, SYSTEM CONTROL), DS-75 (OPERATON SWITCHES) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM**
— Ref. No MA-289 Board, 1,000 Series, DS-75 Board; 1,000 Series —

• See page 4-6 for MA-289 prnted wirng board.




**•SIGNAL PATH**

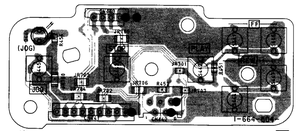
| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/C-CHROMA | |
| REC | | | ⇨ | |
| PB | | | ⇦ | |

**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety
Replace only with part number specified

**Note :**
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité
Ne les remplacer que par une pièce portant le numéro spécifié

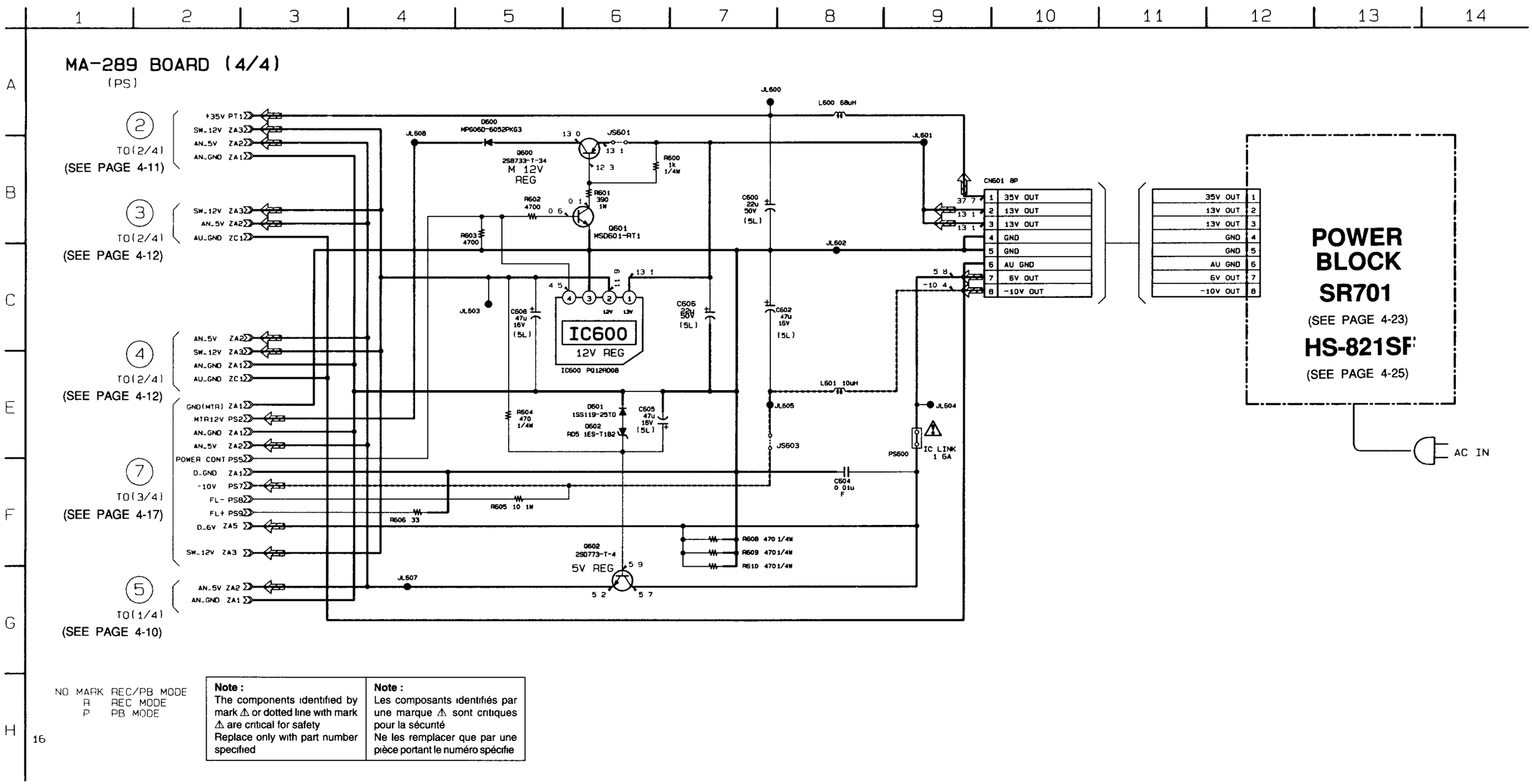
There are few cases that the part printed on this diagram isn't mounted in this model

**DS-75 BOARD (CONDUCTOR SIDE)**



**MA-289 (POWER SUPPLY) SCHEMATIC DIAGRAM**
— Ref No. MA-289 Board; 1,000 Series —

• See page 4-6 for MA-289 printed wiring board




NO MARK REC/PB MODE
R REC MODE
P PB MODE

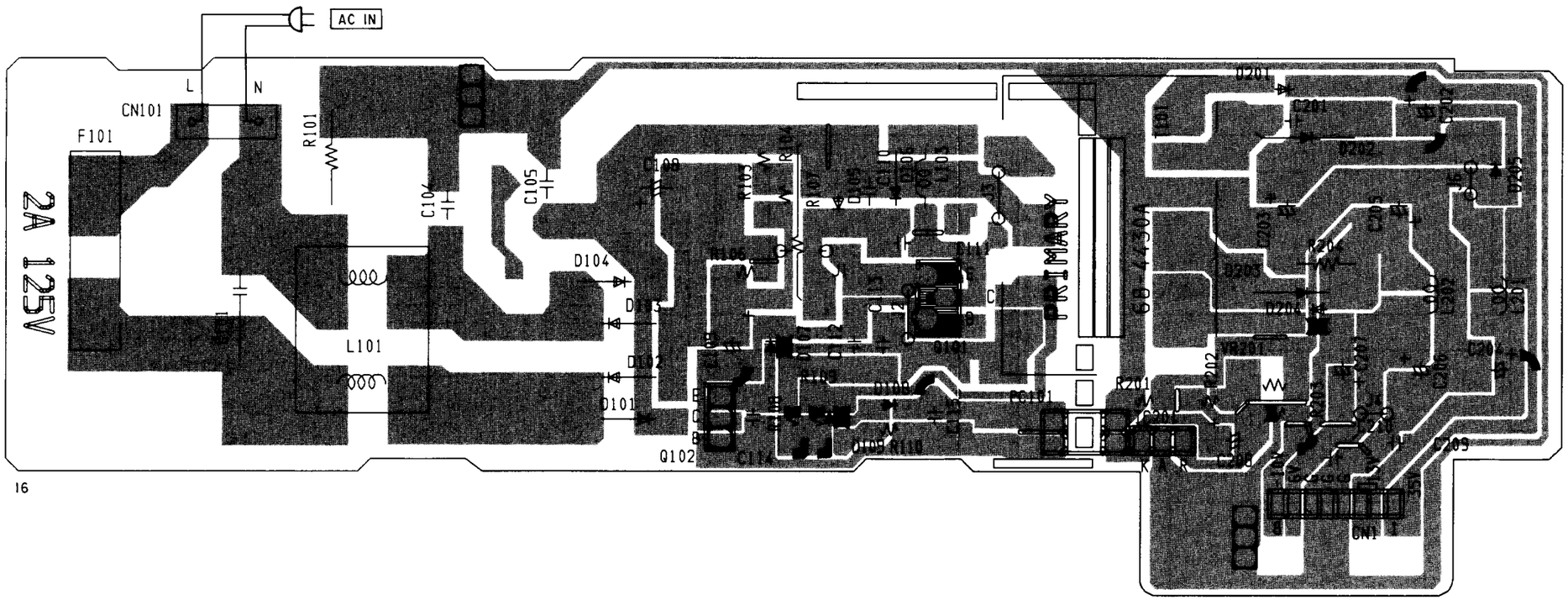
| **Note :** | **Note :** |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety<br>Replace only with part number specified | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité<br>Ne les remplacer que par une pièce portant le numéro spécifie |

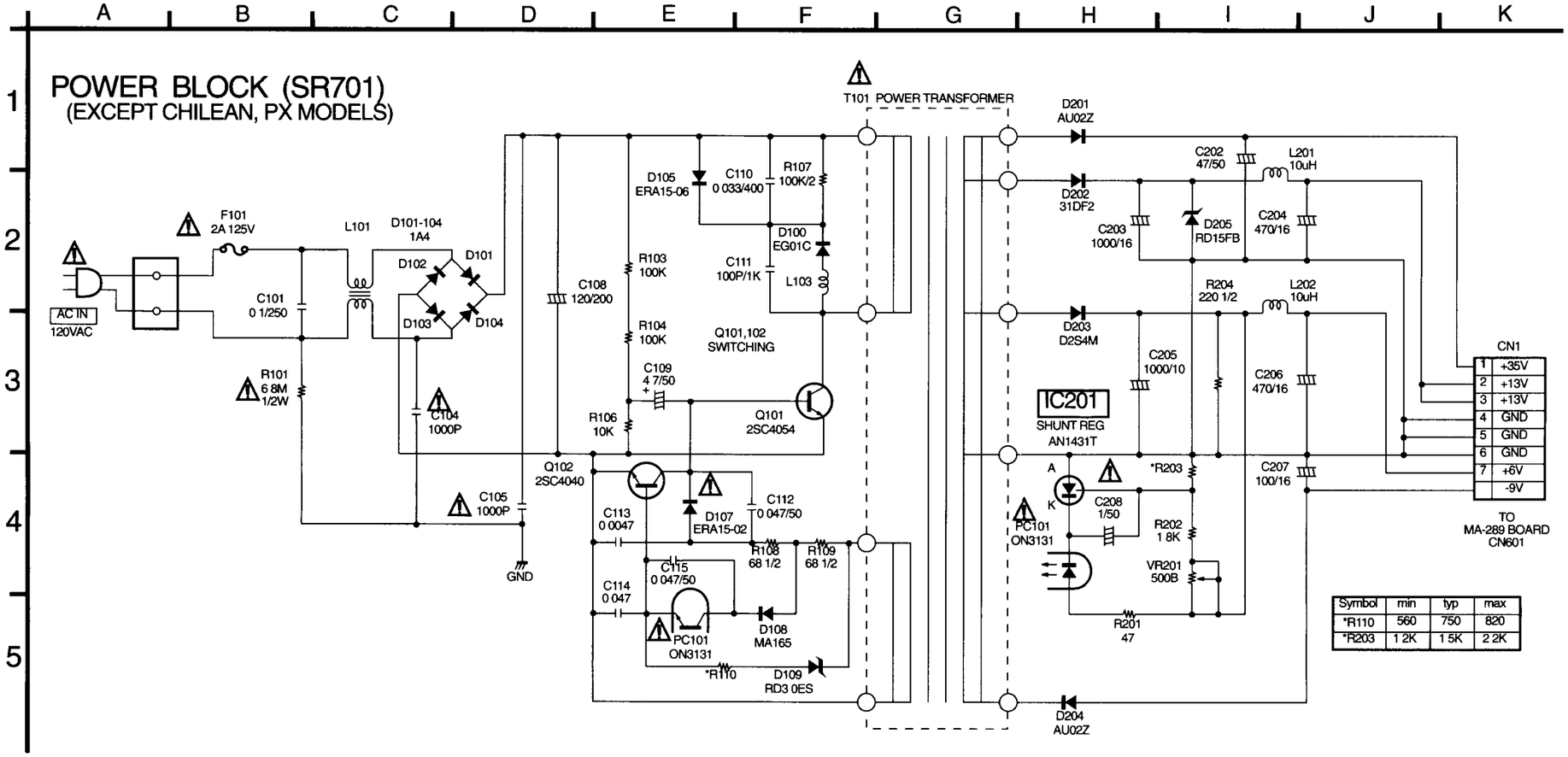
## POWER BLOCK SR701 (SWITCHING REGULATOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. SR701 Board; 5,000 Series —

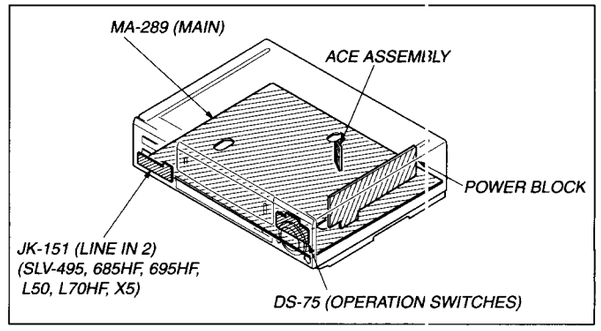
**EXCEPT CHILEAN, PX MODELS**

POWER BLOCK SR701 (EXCEPT CHILEAN, PX MODELS)




| Symbol | min | typ | max |
|---|---|---|---|
| *R110 | 560 | 750 | 820 |
| *R203 | 1 2K | 1 5K | 2 2K |




| **Note :** | **Note :** |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety<br>Replace only with part number specified | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité<br>Ne les remplacer que par une pièce portant le numéro spécifié |

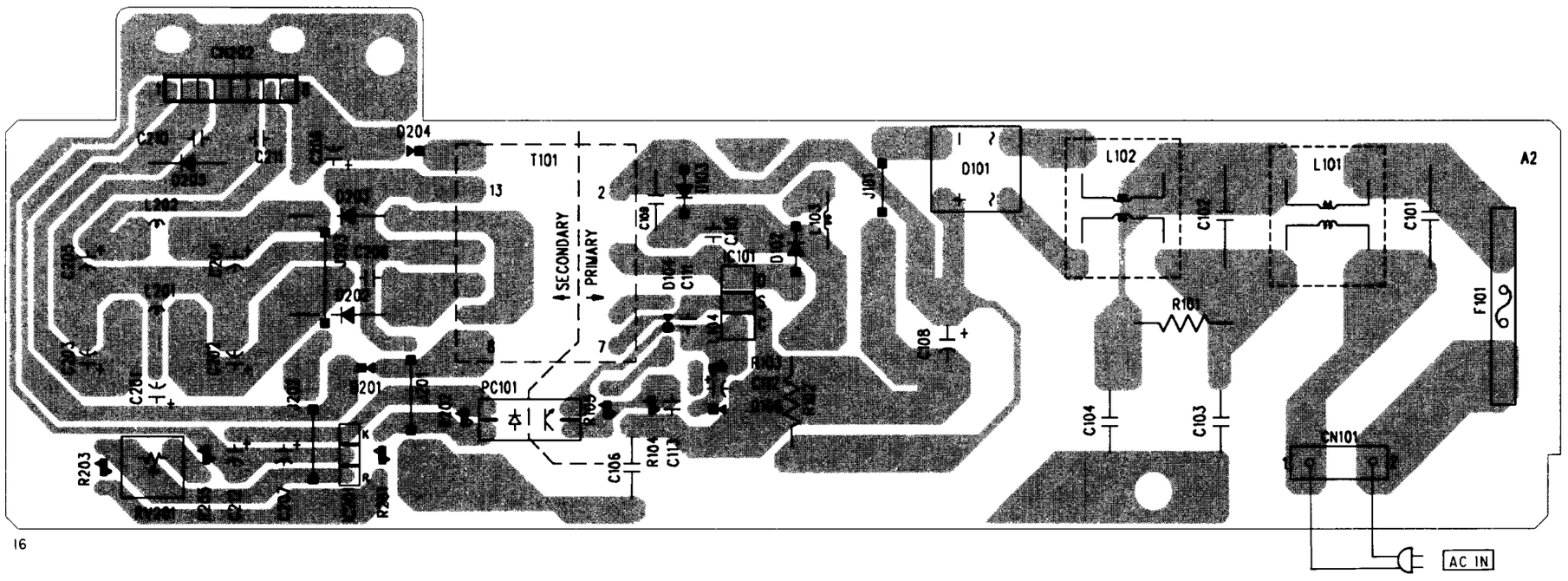
SWITCHING REGULATOR
POWER BLOCK SR701

## POWER BLOCK HS-821SF (SWITCHING REGULATOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

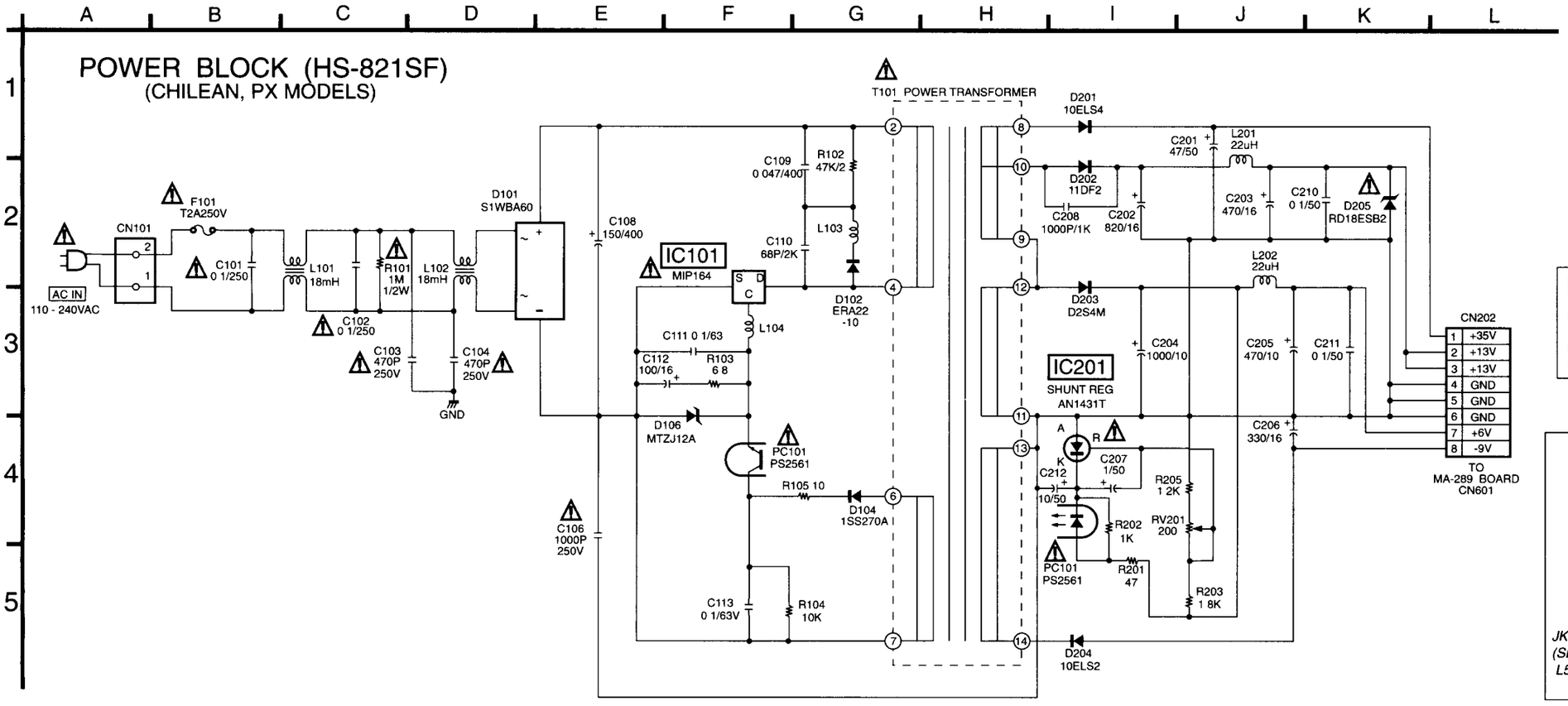
— Ref No HS-821SF Board, 6,000 Series —

**CHILEAN, PX MODELS**

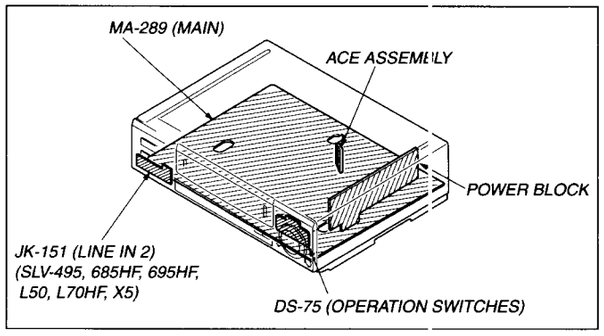
POWER BLOCK HS-821SF (CHILEAN, PX MODEL)






| Note : | Note : |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety<br>Replace only with part number specified | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité<br>Ne les remplacer que par une pièce portant le numéro spécifié |



# SLV-495/495PX/675HF/675HFPX/676HF/685HF/695HF/L40CS/L40MX/L40PA/L50CS/L50MX/ L50PA/L60HFCS/L60HFMX/L60HFPA/L70HFCS/L70HFMX/L70HFPA/X5MX/X6HFMX

# SECTION 5
# REPAIR PARTS LIST

## 5-1. EXPLODED VIEWS

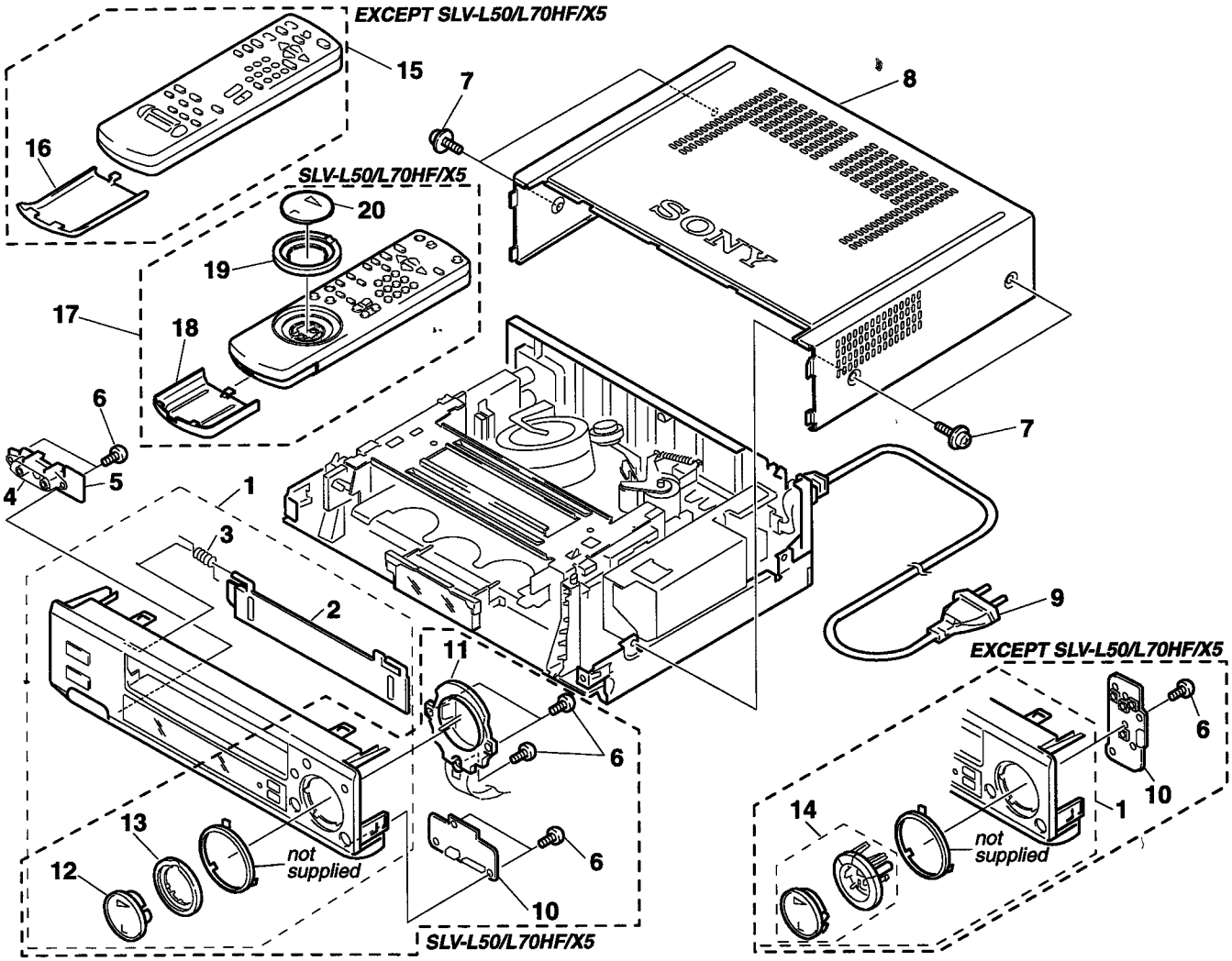
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (#mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

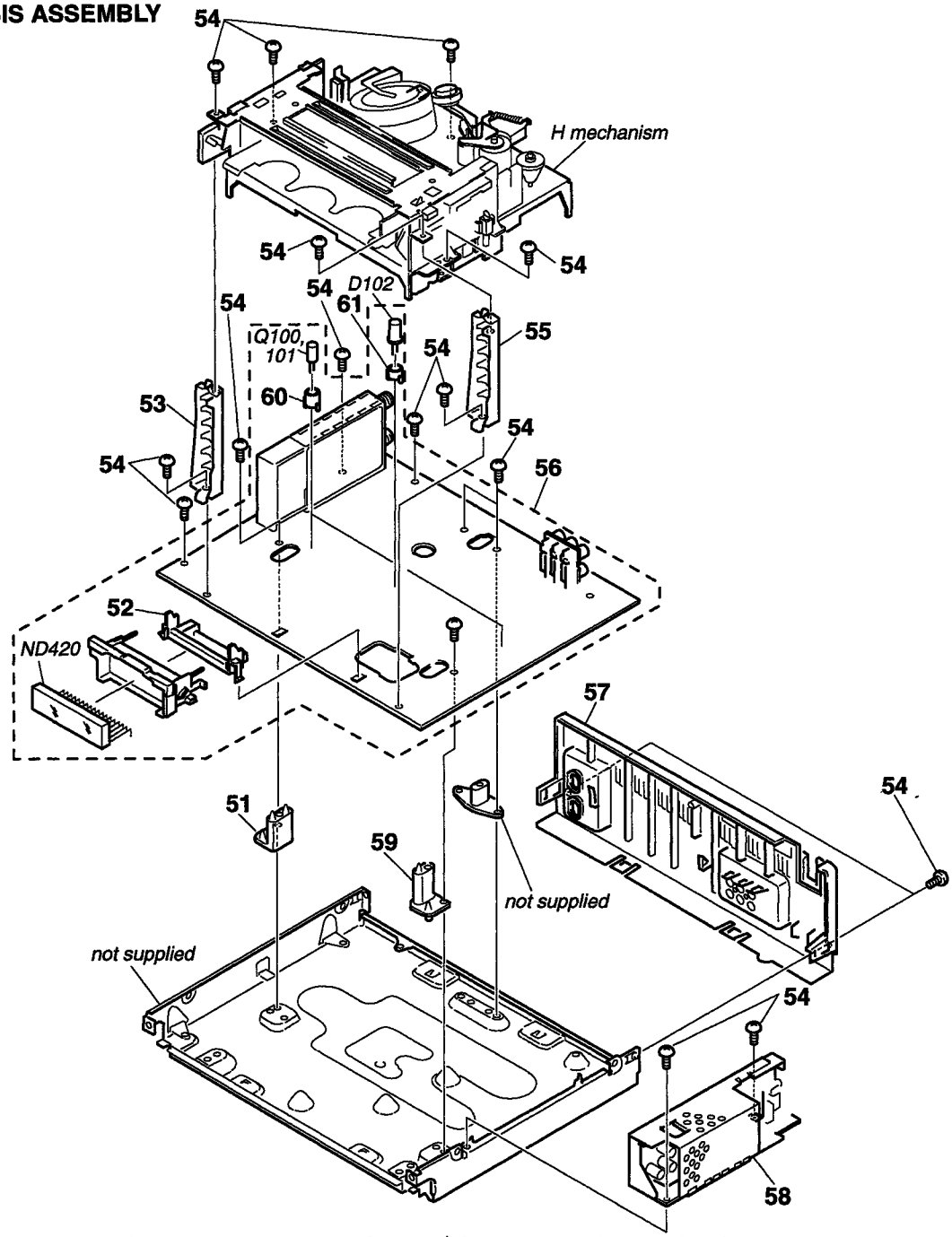
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié

### 5-1-1. FRONT PANEL ASSEMBLY AND CASE




| Ref. No. | Part No. | Description | Remarks |
|---|---|---|---|
| 1 | X-3946-580-1 | PANEL ASSY, FRONT (675HF) | |
| 1 | X-3946-596-1 | PANEL ASSY, FRONT (L70HF) | |
| 1 | X-3946-748-1 | PANEL ASSY, FRONT (695HF) | |
| 1 | X-3946-751-1 | PANEL ASSY, FRONT (495) | |
| 1 | X-3946-754-1 | PANEL ASSY, FRONT (L60HF) | |
| 1 | X-3946-756-1 | PANEL ASSY, FRONT (L50) | |
| 1 | X-3946-758-1 | PANEL ASSY, FRONT (L40) | |
| 1 | X-3947-032-1 | PANEL ASSY, FRONT (676HF) | |
| 1 | X-3947-034-1 | PANEL ASSY, FRONT (X5) | |
| 1 | X-3947-036-1 | PANEL ASSY, FRONT (X6HF) | |
| 1 | X-3947-069-1 | PANEL ASSY, FRONT (685HF) | |
| 2 | 3-972-774-01 | DOOR, CASSETTE (EXCEPT 676HF, X5, X6HF) | |
| 2 | 3-972-774-21 | DOOR, CASSETTE (676HF, X5, X6HF) | |
| 3 | 3-953-432-01 | SPRING (GE), FL | |
| * 4 | 3-972-521-01 | JACK, COVER (685HF, 695HF, L70HF) | |
| * 4 | 3-972-521-11 | JACK, COVER (495, L50, X5) | |
| * 5 | 1-664-505-11 | JK-151 BOARD (495,685HF,695HF,L50,L70HF,X5) | |
| 6 | 4-921-277-41 | SCREW (B2 6X8), TAPPING, BIND | |
| 7 | 3-710-901-11 | SCREW, TAPPING | |
| * 8 | 3-972-502-01 | CASE, UPPER BA (EXCEPT 676HF, X5, X6HF) | |
| * 8 | 3-972-502-31 | CASE, UPPER BA (676HF, X5, X6HF) | |
| ⚠9 | 1-777-851-21 | CORD, POWER(US, Canadian) | |
| ⚠9 | 1-777-854-21 | CORD, POWER(Mexican, Panamanian) | |
| ⚠9 | 1-777-857-21 | CORD, POWER(Chilean, PX) | |
| * 10 | 1-664-504-11 | DS-75 BOARD | |
| 11 | 1-762-844-21 | SWITCH, ROTARY (L50, L70HF, X5) | |
| 12 | 3-972-782-01 | BUTTON, CENTER (L50, L70HF) | |
| 12 | 3-972-782-51 | BUTTON, CENTER (X5) | |
| 13 | 3-972-783-01 | RING, JOG (L50, L70HF, X5) | |
| 14 | X-3946-598-1 | BUTTON ASSY, FUNCTION (676HF, X6HF) | |
| 15 | 1-475-026-11 | REMOTE COMMANDER(RMT-V198C)(L40) | |
| 15 | 1-475-027-21 | REMOTE COMMANDER(RMT-V202A)(695HF) | |
| 15 | 1-475-032-11 | REMOTE COMMANDER(RMT-V203) (675HF, 676HF) | |
| 15 | 1-475-032-21 | REMOTE COMMANDER(RMT-V203A) (495, 685HF) | |
| 15 | 1-475-032-31 | REMOTE COMMANDER(RMT-V203B) (L60HF, X6HF) | |
| 16 | 3-709-128-01 | COVER, BATTERY (EXCEPT 695HF, L40, L50, L70HF, X5) | |
| 16 | 3-709-129-01 | COVER, BATTERY (695HF) | |
| 16 | 3-709-133-01 | COVER, BATTERY (L40) | |
| 17 | 1-475-031-21 | REMOTE COMMANDER (RMT-V201A) (L50, L70HF, X5) | |
| 18 | 3-709-126-01 | COVER, BATTERY (L50, L70HF, X5) | |
| 19 | 3-972-783-21 | RING, JOG (L50, L70HF, X5) | |
| 20 | 3-972-850-01 | BUTTON, FUNCTION (L50, L70HF, X5) | |

## 5-1-2. CHASSIS ASSEMBLY

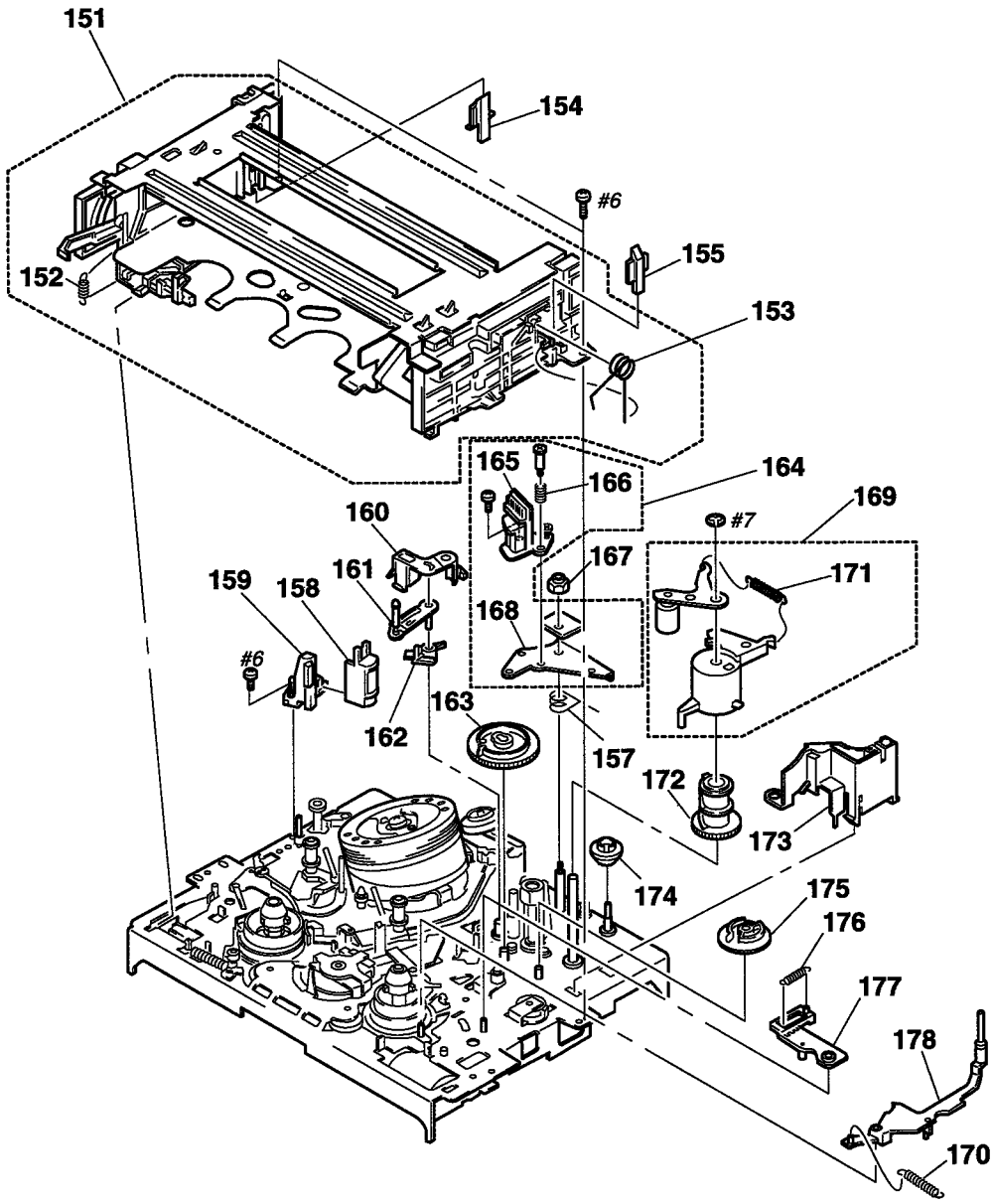



| Ref. No. | Part No. | Description | Remarks |
|---|---|---|---|
| * 51 | 3-959-381-01 | BASE (L), MD | |
| * 52 | 3-966-865-01 | BASE, INDICATION TUBE | |
| * 53 | 3-959-388-01 | BASE (L), FL | |
| 54 | 3-970-608-21 | SUMITITE (B3), +BV | |
| * 55 | 3-959-389-01 | BASE (R), FL | |
| * 56 | A-6791-105-A | MA-289B COMPLETE PCB BOARD, COMPLETE (675HF, 676HF) | |
| * 56 | A-6791-110-A | MA-289A COMPLETE PCB BOARD, COMPLETE (685HF, 695HF) | |
| * 56 | A-6791-124-A | MA-289C COMPLETE PCB BOARD, COMPLETE (495) | |
| * 56 | A-6791-125-A | MA-289D COMPLETE PCB BOARD, COMPLETE (L70HF) | |
| * 56 | A-6791-126-A | MA-289E COMPLETE PCB BOARD, COMPLETE (L60HF, X6HF) | |
| * 56 | A-6791-127-A | MA-289F COMPLETE PCB BOARD, COMPLETE (L50, X5) | |
| * 56 | A-6791-128-A | MA-289G COMPLETE PCB BOARD, COMPLETE (L40) | |
| * 57 | 3-972-504-01 | PANEL, REAR (675HF, 676HF) | |
| * 57 | 3-972-504-11 | PANEL, REAR (L40) | |
| * 57 | 3-972-504-21 | PANEL, REAR (L50, X5HF) | |
| * 57 | 3-972-504-31 | PANEL, REAR (L70HF) | |
| * 57 | 3-972-504-41 | PANEL, REAR (L60HF, X6HF) | |
| * 57 | 3-972-504-71 | PANEL, REAR (685HF, 695HF) | |
| * 57 | 3-972-504-81 | PANEL, REAR (495) | |
| ⚠58 | 1-468-168-11 | POWER BLOCK SR701(EXCEPT Chilean, PX) | |
| ⚠58 | 1-468-169-11 | POWER BLOCK HS-821SF (Chilean, PX) | |
| * 59 | 3-959-383-01 | BASE (R), MD | |
| * 60 | 3-960-273-01 | SPACER, TOP END | |
| * 61 | 3-960-274-01 | SPACER, LED | |
| D102 | 8-719-048-26 | DIODE GL528V1 | |
| ND420 | 1-517-595-11 | TUBE, FLUORESCENT INDICATOR | |
| Q100 | 8-729-025-92 | PHOTO TRANSISTOR PT380F | |
| Q101 | 8-729-025-92 | PHOTO TRANSISTOR PT380F | |

**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

**Note :**
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

## 5-1-3. MECHANISM DECK ASSEMBLY-1




| Ref. No. | Part No | Description | Remarks |
|---|---|---|---|
| 151 | A-6759-603-A | FL BLOCK ASSY | |
| 152 | 3-958-467-01 | SPRING, TENSION COIL | |
| 153 | 3-970-471-01 | SPRING, TORSION | |
| 154 | 3-958-488-03 | PLATE, LIGHT GUIDE, END SENSOR | |
| 155 | 3-970-473-01 | PLATE, LIGHT GUIDE, TOP SENSOR | |
| 157 | 3-958-487-01 | SPRING, (ACE) TORSION COIL | |
| 158 | 1-500-144-11 | HEAD, FE | |
| 159 | X-3945-348-2 | FEH ASSY | |
| 160 | 3-962-298-01 | BRACKET, TG7 TAPE | |
| 161 | X-3944-797-1 | TG8 ASSY | |
| 162 | 3-958-421-01 | HOLDER, TG8 | |
| 163 | 3-958-152-01 | GEAR, TG8 | |
| 164 | A-6736-103-A | ACE BLOCK ASSY | |

| Ref. No. | Part No. | Description | Remarks |
|---|---|---|---|
| 165 | 1-506-485-11 | PIN, CONNECTOR 6P | |
| 166 | 3-960-439-02 | SPRING (ACE), COMPRESSION | |
| 167 | 3-942-867-01 | NUT, AC HEIGHT ADJUSTMENT | |
| 168 | 3-958-491-01 | BASE, ACE | |
| 169 | A-6746-072-A | PRESS BLOCK ASSY, PINCH | |
| 170 | 3-958-505-01 | SPRING (SOFT BRAKE T), TENSION | |
| 171 | 3-958-455-01 | SPRING (PINCH), TENSION | |
| 172 | 3-958-151-01 | GEAR, ELEVATOR | |
| 173 | 3-958-454-01 | OPNER, LID | |
| 174 | 3-958-501-01 | SCREW, ACE ADJUSTMENT | |
| 175 | 3-958-153-01 | GEAR, PRESS | |
| 176 | 3-958-462-01 | SPRING (RVS BRAKE), TENSION | |
| 177 | X-3943-885-1 | ARM ASSY, RVS BRAKE | |
| 178 | X-3943-882-1 | BRAKE (T) ASSY, SOFT | |

## 5-1-4. MECHANISM DECK ASSEMBLY-2

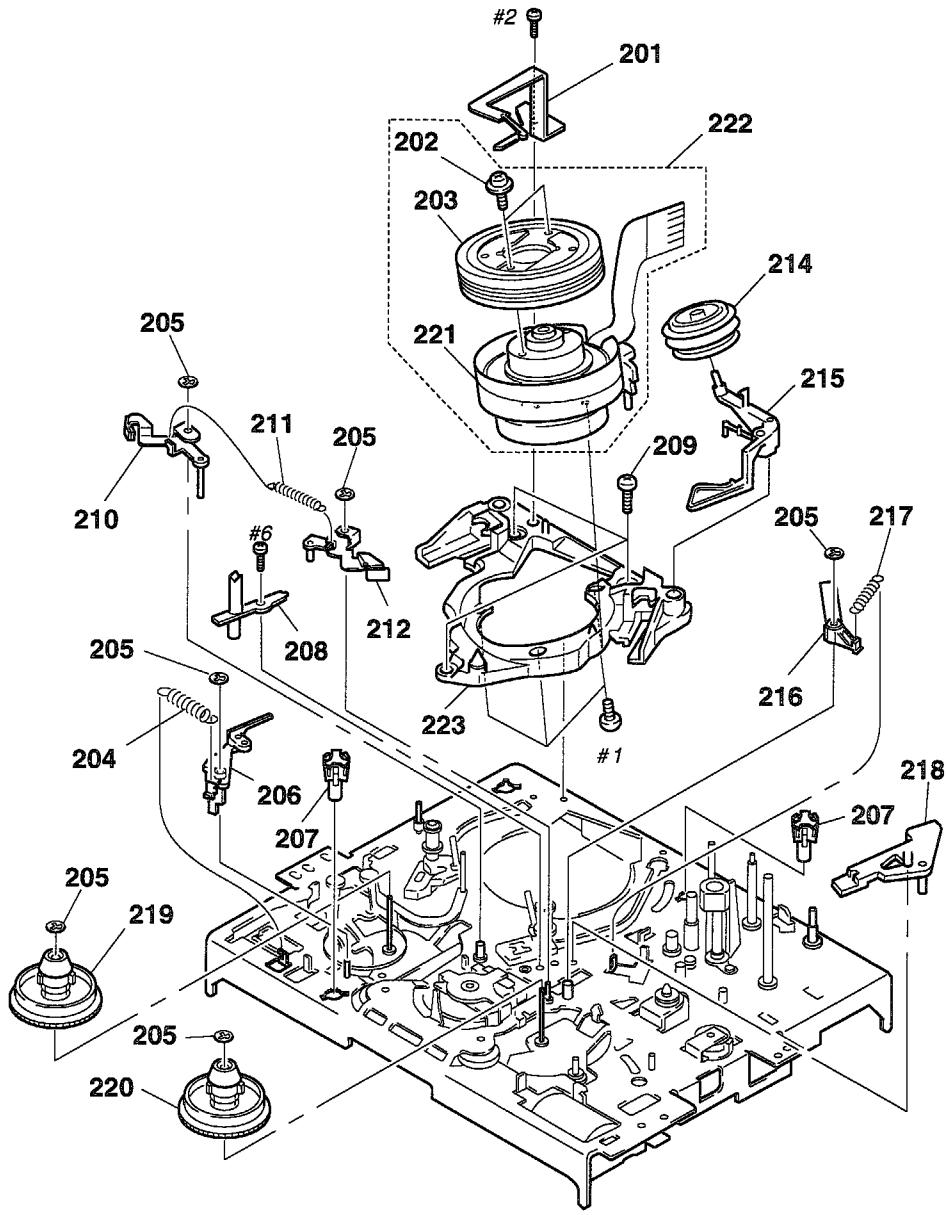
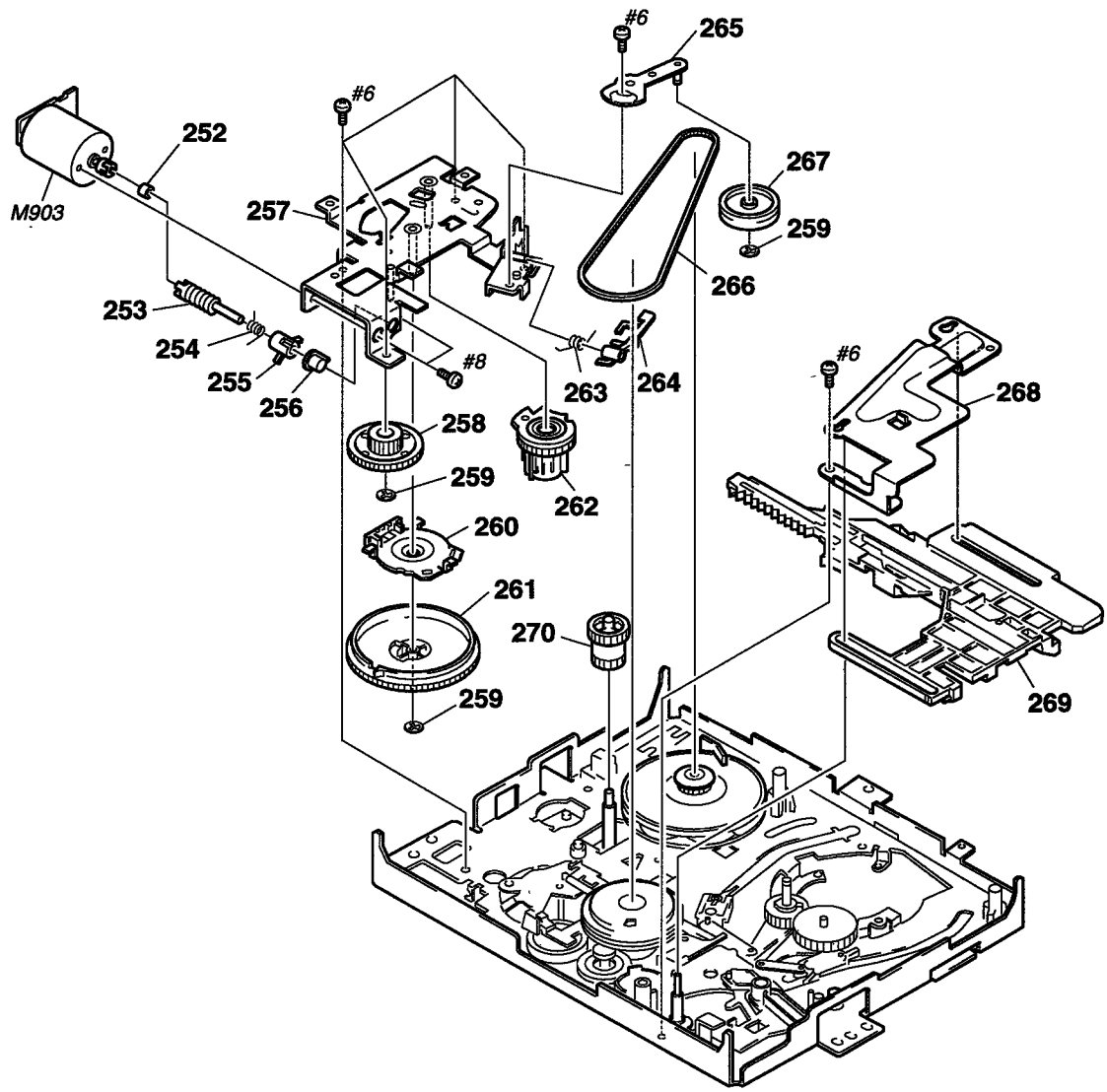



Illustration 675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF

| Ref. No. | Part No | Description | Remarks |
|---|---|---|---|
| 201 | X-3943-899-8 | GROUND ASSY, SHAFT(EXCEPT L2) | |
| 202 | 2-643-205-01 | SCREW | |
| 203 | 8-848-576-02 | UPPER DRUM ASSY DZR-45-R (M901) (675HF/676HF/685HF/695HF/L60HF/L70HF/ X6HF) | |
| 204 | 3-958-443-01 | SPRING, STRETCH COIL SPRING | |
| 205 | 3-669-595-00 | WASHER (2), STOPPER | |
| 206 | 3-958-450-01 | BRAKE (S), SOFT | |
| 207 | 3-958-390-01 | SHAFT, PC BOARD | |
| 208 | 3-958-391-01 | PLATE, LIGHT GUIDE, LED | |
| 209 | 3-961-441-01 | SCREW (3x8) | |
| 210 | X-3945-443-1 | BRAKE (S) ASSY, MAIN | |
| 211 | 3-958-517-01 | SPRING, TENSIONCOIL | |
| 212 | X-3945-444-1 | ARM (T) ASSY, MAIN BRAKE | |
| 214 | X-3947-255-1 | ROLLER ASSY, HC | |
| 215 | 3-975-724-01 | ARM, HC | |
| 216 | 3-960-139-01 | ARM, NEUTRALITY | |
| 217 | 3-958-535-01 | SPRING, TENSION | |
| 218 | 3-960-138-01 | ARM, PENDULUM COMPULSION | |
| 219 | X-3943-902-1 | TABLE, REEL (S) ASSY | |
| 220 | X-3943-903-1 | TABLE, REEL (T) ASSY | |
| 221 | 8-848-666-11 | LOWER DRUM ASSY DZL-51B/J-RP (M901) (675HF/676HF/685HF/695HF/L60HF/L70HF/ X6HF) | |
| 222 | 8-848-681-11 | DRUM ASSY DZH-73B/Q-RP (M901) (495/L40/L50/X) | |
| 223 | 3-969-629-01 | DRUM BASE | |

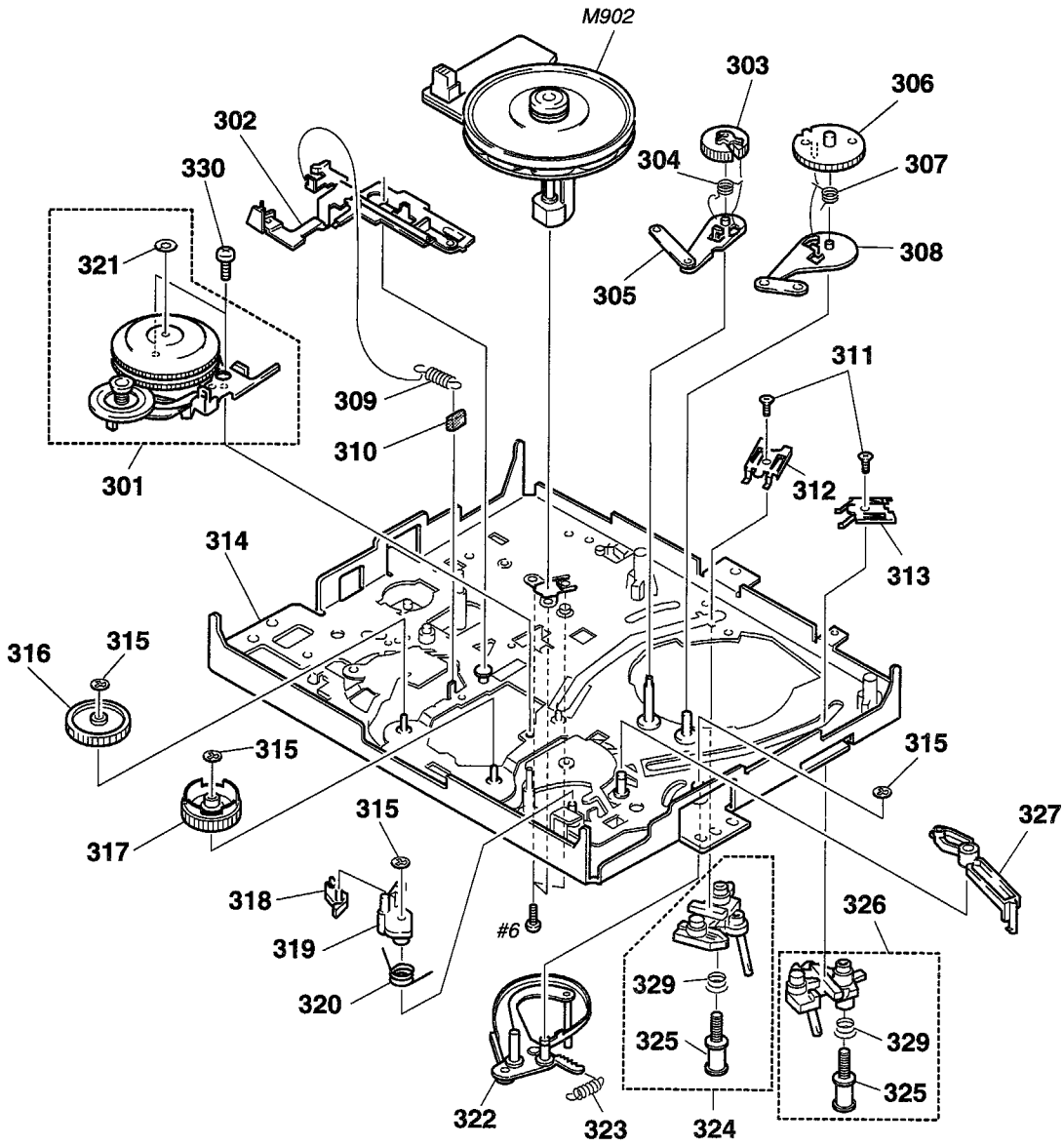
## 5-1-5. MECHANISM DECK ASSEMBLY-3




| Ref. No. | Part No. | Description | Remarks |
|---|---|---|---|
| 252 | 3-959-840-11 | RUBBER, JOINT | |
| 253 | 3-958-159-01 | WORM | |
| 254 | 3-958-460-01 | SPRING, ONE-WAY | |
| 255 | 3-958-160-01 | PROPELLOR | |
| 256 | 3-958-155-01 | BEARING, CAM MOTOR | |
| * 257 | X-3943-884-1 | CHASSIS ASSY, CAM MOTOR | |
| 258 | 3-958-157-02 | WHEEL, WORM | |
| 259 | 3-669-595-00 | WASHER (2), STOPPER | |
| 260 | 1-762-076-11 | SWITCH, ROTARY | |
| 261 | 3-958-161-07 | GEAR, CAM | |

| Ref No. | Part No. | Description | Remarks |
|---|---|---|---|
| 262 | 3-958-156-03 | GEAR, FL DRIVING | |
| 263 | 3-958-445-01 | SPRING,TORSIONCOIL(CAP BRAKE) | |
| 264 | X-3943-888-1 | BRAKE ASSY, CAP | |
| 265 | X-3943-889-1 | ARM ASSY, TENSION VEHICLE | |
| 266 | 3-958-361-01 | BELT, TIMING | |
| 267 | 3-958-448-01 | WHEEL, TENSION | |
| * 268 | 3-959-763-01 | RETAINER | |
| 269 | 3-958-163-04 | SLIDER, MAIN | |
| 270 | 3-958-162-02 | GEAR,UPPER/LOWER COMMUNICATION | |
| M903 | X-3943-883-1 | MOTOR ASSY, CAM | |

## 5-1-6. MECHANISM DECK ASSEMBLY-4




| Ref. No. | Part No | Description | Remarks |
|---|---|---|---|
| 301 | A-6739-102-A | RKB BLOCK ASSY | |
| 302 | X-3943-897-1 | LEVER ASSY, TRIGGER | |
| 303 | 3-958-485-02 | GEAR (T), LOADING | |
| 304 | 3-960-449-01 | SPRING (T), TORSION COIL | |
| 305 | X-3943-891-3 | LEVER (T) ASSY, LOADING | |
| 306 | 3-958-476-01 | GEAR (S), LOADING | |
| 307 | 3-960-448-01 | SPRING (S), TORSION COIL | |
| 308 | X-3943-890-2 | LEVER (S) ASSY, LOADING | |
| 309 | 3-958-529-01 | SPRING (MOMENT), TENSION | |
| 310 | 3-959-840-11 | RUBBER, JOINT | |
| 311 | 3-960-720-01 | SCREW | |
| 312 | 3-960-688-01 | SPRING, LEAF (T), LOADING | |
| 313 | 3-960-687-01 | SPRING, LEAF (S), LOADING | |
| 314 | X-3945-485-4 | CHASSIS ASSY, MECHANICAL | |
| 315 | 3-669-595-00 | WASHER (2), STOPPER | |

| Ref. No. | Part No | Description | Remarks |
|---|---|---|---|
| 316 | 3-962-960-01 | GEAR (T-K), IDLER | |
| 317 | 3-962-959-01 | GEAR (S-K), IDLER | |
| 318 | 3-958-533-01 | CLAW, S WINDING | |
| 319 | 3-958-532-01 | ARM, S WINDING | |
| 320 | 3-958-534-01 | SPRING, TORSION | |
| 321 | 3-966-092-01 | RING, RETAINING, SLIT WASHER | |
| 322 | X-3943-886-1 | TG1 ASSY | |
| 323 | 3-958-492-01 | SPRING (TG1), TENSION COIL | |
| 324 | A-6750-325-A | T BLOCK ASSY, SHUTTLE | |
| 325 | X-3944-378-1 | ROLLER ASSY, GUIDE | |
| 326 | A-6750-316-A | SHUTTLE (S) BLOCK ASSY | |
| 327 | 3-958-504-01 | ARM, FIXED RELEASE | |
| 329 | 3-965-178-01 | SPRING | |
| M902 | 1-698-409-14 | MOTOR, DC (CAPSTAN) | |

## 5-2. ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board naame.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS: uF: μF
- RESISTORS All resistors are in ohms. METAL: metal-film resistor METAL OXIDE: Metal Oxide-film resistor F: nonflammable
- COILS uH: μH
- SEMICONDUCTORS In each case, u: μ, for example: uA...: μA... , uPA... , μPA... , uPB... , μPB... , uPC... , μPC.. , uPD..., μPD...

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| * | 1-664-504-11 | DS-75 BOARD (Ref.No.:1,000 Series) | | | |
| | | ********** | | | |
| | | < CONNECTOR > | | | |
| CN442 | 1-774-471-41 | CONNECTOR, FFC/FPC 5P (L50,L70HF,X5) | | | |
| | | < DIODE > | | | |
| D441 | 8-719-056-06 | DIODE SLR-342DC3F (L50,L70HF,X5) | | | |
| | | < JUMPER RESISTOR > | | | |
| JR700 | 1-216-296-91 | CONDUCTOR, CHIP | (3216) | | |
| JR701 | 1-216-295-91 | CONDUCTOR, CHIP | (2012) | | |
| JR702 | 1-216-296-91 | CONDUCTOR, CHIP | (3216) | | |
| JR703 | 1-216-296-91 | CONDUCTOR, CHIP | (3216) | | |
| JR704 | 1-216-296-91 | CONDUCTOR, CHIP | (3216) | | |
| JR705 | 1-216-296-91 | CONDUCTOR, CHIP | (3216) | | |
| JR706 | 1-216-296-91 | CONDUCTOR, CHIP | (3216) | | |
| JR707 | 1-216-295-91 | CONDUCTOR, CHIP | (2012) | | |
| | | < RESISTOR > | | | |
| R451 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R452 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R454 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W (L50,L70HF,X5) |
| | | < SWITCH > | | | |
| S441 | 1-571-977-11 | SWITCH, TACTIL(FF) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF) | | | |
| S442 | 1-571-977-11 | SWITCH, TACTIL(PB) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF) | | | |
| S443 | 1-571-977-11 | SWITCH, TACTIL(STOP) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF) | | | |
| S444 | 1-571-977-11 | SWITCH, TACTIL(REW) (495,675HF,676HF,685HF,695HF,L40,L60HF,X6HF) | | | |
| S445 | 1-571-977-11 | SWITCH, TACTIL (JOG) (L50,L70HF,X5) | | | |
| S446 | 1-571-977-11 | SWITCH, TACTIL (FF) (L50,L70HF,X5) | | | |
| S447 | 1-571-977-11 | SWITCH, TACTIL (REW) (L50,L70HF,X5) | | | |
| * | 1-664-505-11 | JK-151 BOARD | | | |
| | | ********** | | | |
| | | (495,685HF,695HF,L50,L70HF,X5) (Ref.No.:2,000 Series) | | | |
| | | < CAPACITOR > | | | |
| C803 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C805 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V (685HF,695HF,L70HF) |
| C806 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| | | < JACK > | | | |
| CJ801 | 1-774-509-11 | JACK, PIN 3P(LINE IN 2) (685HF,695HF,L70HF) | | | |
| CJ801 | 1-774-510-11 | JACK, PIN 2P(LINE IN 2)(495,L50,X5) | | | |
| | | < CONNECTOR > | | | |
| CN801 | 1-506-483-21 | PIN, CONNECTOR 4P (495,L50,X5) | | | |
| CN801 | 1-506-484-11 | PIN, CONNECTOR 5P (685H,695HF,L70HF) | | | |
| | | < DIODE > | | | |
| D802 | 8-719-108-12 | DIODE RD9.1E-W (685HF,695HF,L70HF) | | | |
| D801 | 8-719-108-12 | DIODE RD9.1E-W | | | |
| D803 | 8-719-109-84 | DIODE RD5.1ESB2 | | | |
| D804 | 8-719-108-12 | DIODE RD9 1E-W | | | |
| | | < JUMPER RESISTOR > | | | |
| JS801 | 1-216-295-91 | CONDUCTOR, CHIP (2012) (495,L50,X5) | | | |
| | | < RESISTOR > | | | |
| R801 | 1-216-295-91 | CONDUCTOR, CHIP(2012) | | | |
| R802 | 1-216-295-91 | CONDUCTOR, CHIP(2012)(685HF,695HF,L70HF) | | | |
| R803 | 1-216-022-00 | METAL CHIP | 75 | 5% | 1/10W |
| * | A-6791-105-A | MA-289B BOARD, COMPLETE (675HF,676HF) | | | |
| | | ********** | | | |
| * | A-6791-110-A | MA-289A BOARD, COMPLETE (685HF,695HF) | | | |
| | | ********** | | | |
| * | A-6791-124-A | MA-289C BOARD, COMPLETE (495) | | | |
| | | ********** | | | |
| * | A-6791-125-A | MA-289D BOARD, COMPLETE (L70HF) | | | |
| | | ********** | | | |
| * | A-6791-126-A | MA-289E BOARD, COMPLETE (L60HF,X6HF) | | | |
| | | ********** | | | |
| * | A-6791-127-A | MA-289F BOARD, COMPLETE (L50, X5) | | | |
| | | ********** | | | |
| * | A-6791-128-A | MA-289G BOARD, COMPLETE (L40) | | | |
| | | ********** | | | |
| | | (Ref.No.:1,000 Series) | | | |
| * | 3-960-273-01 | SPACER, TOP END | | | |
| * | 3-960-274-01 | SPACER, LED | | | |
| * | 3-966-865-01 | BASE, INDICATION TUBE | | | |
| | | < BUZZER > | | | |
| BZ160 | 1-529-080-11 | BUZZER, PIEZOELECTRIC | | | |
| | | < CAPACITOR > | | | |
| C102 | 1-163-251-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C103 | 1-163-251-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C104 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C106 | 1-104-760-11 | CERAMIC CHIP | 0.047uF | 10% | 50V |
| C111 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |

# MA-289

| Ref No | Part No | Description | | | Remarks |
|---|---|---|---|---|---|
| C112 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C113 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C114 | 1-163-031-11 | CERAMIC CHIP | 0 01uF | | 50V |
| C115 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C118 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C119 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C120 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C131 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C132 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C134 | 1-163-031-11 | CERAMIC CHIP | 0 01uF | | 50V |
| C140 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V |
| C141 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C142 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C144 | 1-163-251-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C146 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C147 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C148 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C160 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C161 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C162 | 1-104-905-11 | CAPACITOR | 0.22F | | 5 5V |
| C163 | 1-163-227-11 | CERAMIC CHIP | 10PF | 0 5PF | 50V |
| C164 | 1-163-227-11 | CERAMIC CHIP | 10PF | 0 5PF | 50V |
| C165 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V |
| C166 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V |
| C167 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C168 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C170 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C171 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V |
| C172 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C201 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C202 | 1-163-809-11 | CERAMIC CHIP | 0 047uF | 10% | 25V |
| C204 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C205 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C206 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C207 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C208 | 1-163-241-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C209 | 1-124-234-00 | ELECT | 22uF | 20% | 16V |
| C210 | 1-163-131-00 | CERAMIC CHIP | 390PF | 5% | 50V |
| C211 | 1-163-239-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C213 | 1-163-257-11 | CERAMIC CHIP | 180PF | 5% | 50V |
| C214 | 1-163-235-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C217 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C219 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C220 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C222 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| | | | (495,L50,685HF,695HF,L70HF,X5) | | |
| C223 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C224 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C226 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C227 | 1-163-091-00 | CERAMIC CHIP | 8PF | | 50V |
| C228 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C229 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C230 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C231 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C232 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C233 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C234 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C235 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C236 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C237 | 1-164-232-11 | CERAMIC CHIP | 0 01uF | | 50V |
| C238 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| C239 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C240 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C241 | 1-163-037-11 | CERAMIC CHIP | 0 022uF | 10% | 25V |
| C242 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C243 | 1-164-232-11 | CERAMIC CHIP | 0 01uF | | 50V |
| C244 | 1-164-004-11 | CERAMIC CHIP | 0 1uF | 10% | 25V |
| C245 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V |
| C246 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C247 | 1-163-809-11 | CERAMIC CHIP | 0 047uF | 10% | 25V |
| C248 | 1-164-232-11 | CERAMIC CHIP | 0 01uF | | 50V |
| C249 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C250 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C251 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C252 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C253 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C254 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C255 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C256 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C260 | 1-163-229-11 | CERAMIC CHIP | 12PF | 5% | 50V |
| C261 | 1-163-229-11 | CERAMIC CHIP | 12PF | 5% | 50V |
| C264 | 1-163-037-11 | CERAMIC CHIP | 0 022uF | 10% | 25V |
| C265 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C266 | 1-164-232-11 | CERAMIC CHIP | 0 01uF | | 50V |
| C267 | 1-163-037-11 | CERAMIC CHIP | 0 022uF | 10% | 25V |
| C268 | 1-163-241-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C269 | 1-163-241-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C270 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C271 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C272 | 1-163-241-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C273 | 1-163-241-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C274 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C276 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C277 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C278 | 1-163-037-11 | CERAMIC CHIP | 0 022uF | 10% | 25V |
| C279 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C280 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C281 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C282 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C283 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C284 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C286 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C287 | 1-163-227-11 | CERAMIC CHIP | 10PF | 0 5PF | 50V |
| C288 | 1-163-227-11 | CERAMIC CHIP | 10PF | 0 5PF | 50V |
| C289 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C301 | 1-163-038-00 | CERAMIC CHIP | 0 1uF | | 25V |
| C302 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C303 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | | | | (495,L40,L50,X5) |
| C304 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | | | | (495,L50,X5) |
| C305 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C306 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C307 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C308 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C309 | 1-126-963-11 | ELECT | 4 7uF | 20% | 50V |
| C310 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C311 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V |
| C312 | 1-137-370-11 | FILM | 0.01uF | 5% | 50V |
| C313 | 1-126-964-11 | ELECT | 10uF | 20% | 50V |
| C314 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C315 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C317 | 1-126-963-11 | ELECT | 4.7uF | 20% | 50V |

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| C318 | 1-126-967-11 | ELECT | 47uF | 20% | 16V |
| C321 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C322 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C323 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C324 | 1-104-697-11 | FILM | 0.047uF | 5% | 100V |
| C341 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C342 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C343 | 1-124-257-00 | ELECT | 2.2uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C344 | 1-164-232-11 | CERAMIC CHIP | 0 01uF | | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C345 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C346 | 1-164-232-11 | CERAMIC CHIP | 0 01uF | | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C347 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C350 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C351 | 1-163-135-00 | CERAMIC CHIP | 560PF | 5% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C352 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C353 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C356 | 1-163-135-00 | CERAMIC CHIP | 560PF | 5% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C357 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C358 | 1-164-004-11 | CERAMIC CHIP | 0 1uF | 10% | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C361 | 1-164-222-11 | CERAMIC CHIP | 0.22uF | | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C362 | 1-164-222-11 | CERAMIC CHIP | 0.22uF | | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C363 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C364 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C365 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C366 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C369 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C370 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C371 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C372 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C373 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C374 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C375 | 1-137-378-11 | FILM | 0.22uF | 5% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C376 | 1-137-437-11 | FILM | 0.0056uF | 5% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C377 | 1-126-967-11 | ELECT | 47uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C378 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C379 | 1-124-257-00 | ELECT | 2.2uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C380 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C381 | 1-126-967-11 | ELECT | 47uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C382 | 1-137-437-11 | FILM | 0.0056uF | 5% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C383 | 1-137-378-11 | FILM | 0.22uF | 5% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C384 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C385 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C386 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C387 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C388 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C389 | 1-104-760-11 | CERAMIC CHIP | 0.047uF | 10% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C390 | 1-164-222-11 | CERAMIC CHIP | 0.22uF | | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C391 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C392 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C405 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C406 | 1-104-760-11 | CERAMIC CHIP | 0.047uF | 10% | 50V |
| C407 | 1-104-760-11 | CERAMIC CHIP | 0.047uF | 10% | 50V |
| C421 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C422 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C423 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C424 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C460 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C461 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C462 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C501 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V |
| C502 | 1-163-237-11 | CERAMIC CHIP | 27PF | 5% | 50V |
| C503 | 1-163-239-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C504 | 1-163-239-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C505 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C506 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C507 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C508 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C509 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C510 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C512 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C513 | 1-163-227-11 | CERAMIC CHIP | 10PF | 0 5PF | 50V |
| C541 | 1-126-935-11 | ELECT | 470uF | 20% | 6.3V |
| C542 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C543 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C544 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C570 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C571 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C572 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C573 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| C574 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| C575 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C600 | 1-128-131-11 | ELECT | 22uF | 20% | 50V |
| C602 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C604 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C605 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C606 | 1-128-131-11 | ELECT | 22uF | 20% | 50V |
| C608 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C701 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C704 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C706 | 1-126-964-11 | ELECT | 10uF | 20% | 50V |
| C707 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C708 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C709 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C710 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C711 | 1-163-024-00 | CERAMIC CHIP | 0.018uF | 10% | 50V (495,L40,L50,X5) |
| C731 | 1-124-261-00 | ELECT | 10uF | 20% | 50V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| C732 | 1-124-261-00 | ELECT | 10uF | 20% | 50V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| C733 | 1-124-261-00 | ELECT | 10uF | 20% | 50V |
| C735 | 1-124-261-00 | ELECT | 10uF | 20% | 50V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| C736 | 1-124-589-11 | ELECT | 47uF | 20% | 16V (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| C980 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V (495,685HF,695HF) |
| C981 | 1-124-589-11 | ELECT | 47uF | 20% | 16V (495,685HF,695HF) |
| C982 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V (495,685HF,695HF) |
| C983 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V (495,685HF,695HF) |
| C984 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V (495,685HF,695HF) |
| C985 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V (495,685HF,695HF) |
| C986 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V (495,685HF,695HF) |
| | | < JACK > | | | |
| CJ540 | 1-779-010-11 | JACK, PIN 4P (LINE IN/OUT)(495,L40) | | | |
| CJ540 | 1-779-011-11 | JACK, PIN 6P (LINE IN/OUT) (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| CJ540 | 1-779-012-11 | JACK, PIN 5P (LINE IN/OUT)(L50,X5) | | | |
| CNJ980 | 1-779-013-11 | JACK, MINIATURE(CABLE BOX CONTROL) (495,685HF,695HF) | | | |
| | | < CONNECTOR > | | | |
| CN101 | 1-506-470-11 | PIN, CONNECTOR 5P | | | |
| * CN102 | 1-766-538-11 | CONNECTOR, BOARD TO BOARD 8P | | | |
| * CN103 | 1-766-537-11 | CONNECTOR (HMD) 5P | | | |
| * CN104 | 1-766-716-11 | CONNECTOR, BOARD TO BOARD 3P | | | |
| CN140 | 1-506-468-11 | PIN, CONNECTOR 3P | | | |
| CN260 | 1-563-585-11 | CONNECTOR, FLEXIBLE 8P (495,L40,L50,X5) | | | |
| CN260 | 1-766-986-11 | CONNECTOR, FFC/FPC 13P (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| * CN261 | 1-560-892-00 | PIN, CONNECTOR 4P | | | |
| CN301 | 1-506-469-11 | PIN, CONNECTOR 4P | | | |
| CN302 | 1-506-468-11 | PIN, CONNECTOR 3P | | | |

| Ref No. | Part No. | Description | Remarks |
|---|---|---|---|
| * CN341 | 1-560-890-00 | PIN, CONNECTOR 2P (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| CN401 | 1-506-469-11 | PIN, CONNECTOR 4P(EXCEPT L50,L70HF,X5) | |
| CN401 | 1-506-474-11 | PIN, CONNECTOR 9P(L50,L70HF,X5) | |
| CN423 | 1-506-469-11 | PIN, CONNECTOR 4P(495,L50,X5) | |
| CN423 | 1-506-470-11 | PIN, CONNECTOR 5P(685HF,695HF,L70HF) | |
| CN601 | 1-569-667-11 | CONNECTOR, BOARD TO BOARD 8P | |
| | | < DIODE > | |
| D102 | 8-719-048-26 | DIODE GL528V1 | |
| D161 | 8-719-200-82 | DIODE 11ES2 | |
| D162 | 8-719-200-82 | DIODE 11ES2 | |
| D301 | 8-719-911-19 | DIODE 1SS119 (495,L40,L50,X5) | |
| D302 | 8-719-911-19 | DIODE 1SS119 (495,L40,L50,X5) | |
| D361 | 8-719-911-19 | DIODE 1SS119 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| D401 | 8-719-054-09 | DIODE MPG5304S | |
| D501 | 8-719-911-19 | DIODE 1SS119 | |
| D540 | 8-719-109-84 | DIODE RD5.1ES-B1 | |
| D600 | 8-719-200-82 | DIODE 11ES2 | |
| D601 | 8-719-911-19 | DIODE 1SS119 | |
| D602 | 8-719-109-85 | DIODE RD5.1ES-B2 | |
| D702 | 8-719-110-78 | DIODE RD33ES-B2 | |
| D980 | 8-719-110-08 | DIODE RD8.2ES-B2 (495,685HF,695HF) | |
| D981 | 8-719-110-08 | DIODE RD8.2ES-B2 (495,685HF,695HF) | |
| D982 | 8-719-911-19 | DIODE 1SS119 (495,685HF,695HF) | |
| | | < IC > | |
| IC131 | 8-759-353-59 | IC LB1643 | |
| IC160 | 8-759-462-97 | IC M37777M7A-VSX8521-2 (495,685HF,695HF) | |
| IC160 | 8-759-462-98 | IC M37776M5A-VSX8513-2 (EXCEPT 495,685HF,695HF) | |
| IC201 | 8-759-439-49 | IC LA71530M | |
| IC202 | 8-759-439-51 | IC LC89978M-TE-L | |
| IC260 | 8-759-352-17 | IC HA118195NT | |
| IC301 | 8-759-089-84 | IC BA7755AF-T1 | |
| IC340 | 8-759-055-49 | IC AN3327K (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| IC360 | 8-759-445-22 | IC TDA9603H/N2,557 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| IC361 | 8-759-708-05 | IC NJM78L05A (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| IC403 | 8-742-042-00 | RE CEIVER HIC SBX1986-51 | |
| IC420 | 8-759-366-44 | IC uPD16312GB-3B4 | |
| IC461 | 8-759-248-87 | IC MM1256XF-BE | |
| IC462 | 8-759-433-52 | IC AT24C01A-10SC-#B (EXCEPT 495,685HF,695HF) | |
| IC462 | 8-759-433-53 | IC AT24C02N-10SC-#B (495,685HF,695HF) | |
| IC501 | 8-759-354-26 | IC BU6188FS-E2 | |
| IC540 | 8-759-100-96 | IC uPC4558G2 | |
| IC600 | 8-759-438-18 | IC PQ12RD08 | |
| IC733 | 8-742-037-00 | IC SBX1837-51 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| IC980 | 8-759-356-27 | IC NJM2129M-TE2 (495,685HF,695HF) | |
| | | < JUMPER RESISTOR > | |
| JR100 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| JR101 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| JR102 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| JR105 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| JR106 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| JR107 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR108 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR111 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR112 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR113 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR114 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR115 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR116 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR117 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR119 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR120 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR221 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR222 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR250 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR251 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR253 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR257 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR258 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR259 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR260 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR301 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR302 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR303 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR304 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR305 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR306 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR307 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR308 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR309 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR310 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR311 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR312 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR313 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR314 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR316 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR317 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR318 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR319 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR320 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR321 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR323 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR324 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR325 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR326 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR327 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR329 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR330 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR331 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR332 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR333 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR334 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR335 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR336 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR337 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR338 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR339 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR340 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR341 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR342 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR345 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR346 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR347 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR350 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR351 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR352 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR354 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR355 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR402 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR403 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR405 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR500 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR501 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR502 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR503 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR505 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR506 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR507 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR508 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR509 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR510 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR511 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR512 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR513 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | < JUMPER RESISTOR > | | | |
| JS702 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W (495,L40,L50,X5) |
| | | < COIL > | | | |
| L130 | 1-403-588-11 | COIL, CHOKE | 22uH | | |
| L140 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L161 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L162 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L163 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L164 | 1-410-519-11 | INDUCTOR | 68uH | | |
| L201 | 1-410-516-11 | INDUCTOR | 39uH | | |
| L202 | 1-410-521-11 | INDUCTOR | 100uH | | |
| L204 | 1-410-501-11 | INDUCTOR | 2.2uH | | |
| L205 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L206 | 1-410-501-11 | INDUCTOR | 2.2uH | | |
| L207 | 1-410-518-41 | INDUCTOR | 56uH | | |
| L262 | 1-408-982-11 | INDUCTOR | 100uH | | |
| L263 | 1-408-982-11 | INDUCTOR | 100uH | | |
| L301 | 1-410-521-11 | INDUCTOR | 100uH | | |
| L321 | 1-408-982-11 | INDUCTOR | 100uH | | |
| L341 | 1-408-982-11 | INDUCTOR | 100uH | | |
| L361 | 1-408-982-11 | INDUCTOR | 100uH (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | |
| L501 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L502 | 1-412-470-21 | INDUCTOR | 22uH | | |
| L503 | 1-410-513-11 | INDUCTOR | 22uH | | |
| L540 | 1-408-982-11 | INDUCTOR | 100uH | | |
| L570 | 1-408-982-11 | INDUCTOR | 100uH | | |
| L600 | 1-410-519-11 | INDUCTOR | 68uH | | |
| L601 | 1-408-970-21 | INDUCTOR | 10uH | | |
| L702 | 1-408-978-21 | INDUCTOR | 47uH | | |
| L703 | 1-410-501-11 | INDUCTOR | 2.2uH | | |
| L704 | 1-410-501-11 | INDUCTOR | 2.2uH | | |
| L731 | 1-410-513-11 | INDUCTOR | 22uH (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | |

# MA-289

| Ref. No. | Part No. | Description | Remarks |
|---|---|---|---|
| | | < FLUORECENT INDICATOR > | |
| ND420 | 1-517-595-11 | TUBE, FLUORESCENT INDICATOR | |
| | | < PHOTO INTERRUPTER > | |
| PH100 | 8-749-010-20 | PHOTO INTERRUPTER GP3S114 | |
| PH101 | 8-749-010-19 | PHOTO INTERRUPTER GP3S113 | |
| | | < IC LINK > | |
| ⚠PS403 | 1-533-586-31 | LINK, IC 315mA | |
| ⚠PS600 | 1-532-841-21 | LINK, IC 1 6A | |
| | | < TRANSISTOR > | |
| Q100 | 8-729-025-92 | PHOTO TRANSISTOR PT380F | |
| Q101 | 8-729-025-92 | PHOTO TRANSISTOR PT380F | |
| Q102 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q201 | 8-729-230-49 | TRANSISTOR 2SC2712-G | |
| Q202 | 8-729-230-49 | TRANSISTOR 2SC2712-G | |
| Q208 | 8-729-230-49 | TRANSISTOR 2SC2712-G | |
| Q209 | 8-729-216-21 | TRANSISTOR 2SA1162Y | |
| Q210 | 8-729-230-49 | TRANSISTOR 2SC2712-G | |
| Q211 | 8-729-230-49 | TRANSISTOR 2SC2712-G | |
| Q260 | 8-729-230-49 | TRANSISTOR 2SC2712-G | |
| Q301 | 8-729-281-53 | TRANSISTOR 2SC1815-GR | |
| Q302 | 8-729-424-67 | TRANSISTOR UN2216 (495,L40,L50,X5) | |
| Q321 | 8-729-802-91 | TRANSISTOR 2SD879 | |
| Q361 | 8-729-102-14 | TRANSISTOR 2SD1021-F (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| Q362 | 8-729-102-14 | TRANSISTOR 2SD1021-F (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| Q363 | 8-729-102-14 | TRANSISTOR 2SD1021-F (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| Q364 | 8-729-010-05 | TRANSISTOR MSB709-RT1 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| Q501 | 8-729-216-21 | TRANSISTOR 2SA1162Y | |
| Q502 | 8-729-010-05 | TRANSISTOR MSB709-RT1 | |
| Q600 | 8-729-140-93 | TRANSISTOR 2SB733-34 | |
| Q601 | 8-729-010-25 | TRANSISTOR MSD601-RT1 | |
| Q602 | 8-729-140-98 | TRANSISTOR 2SD773-34 | |
| Q681 | 8-729-010-05 | TRANSISTOR MSB709-RT1 | |
| Q731 | 8-729-421-19 | TRANSISTOR UN2213 (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| | | < RESISTOR > | |
| R100 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R101 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R102 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R103 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R104 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R105 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R106 | 1-216-057-00 | METAL CHIP 2.2K 5% 1/10W | |
| R107 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R108 | 1-247-807-31 | CARBON 100 5% 1/4W | |
| R109 | 1-247-807-31 | CARBON 100 5% 1/4W | |
| R111 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R112 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R113 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R114 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R115 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |

| Ref No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| R117 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R124 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R125 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R126 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R130 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R131 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R132 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R133 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R140 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R160 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R161 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (495,L40 L70HF) |
| R162 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (L60HF,L70HF,X6HF) |
| R163 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (L50,X5) |
| R164 | 1-216-121-91 | METAL GLAZE | 1M | 5% | 1/10W |
| R165 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| R166 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R167 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R168 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R169 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (495,685HF,695HF) |
| R170 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R171 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R172 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R173 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R174 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R175 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R176 | 1-218-179-11 | METAL GLAZE | 10M | 5% | 1/10W |
| R177 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R179 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R180 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R181 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R185 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R201 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R202 | 1-216-069-00 | METAL CHIP | 6 8K | 5% | 1/10W |
| R203 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R204 | 1-216-047-91 | METAL GLAZE | 820 | 5% | 1/10W |
| R205 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R206 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R207 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R208 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R209 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R214 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W |
| R218 | 1-208-798-11 | METAL GLAZE | 4 7K | 0.50% | 1/10W |
| R219 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R220 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R222 | 1-216-051-00 | METAL CHIP | 1 2K | 5% | 1/10W |
| R223 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R224 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (495,685HF,695HF,L50,L70HF,X5) |
| R225 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R226 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W |
| R227 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W |

**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety
Replace only with part number specified

**Note :**
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| R228 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R229 | 1-216-055-00 | METAL CHIP | 1 8K | 5% | 1/10W |
| R230 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W |
| R231 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R232 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R234 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R235 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R236 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R237 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R238 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R239 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R240 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R243 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R260 | 1-216-044-00 | METAL CHIP | 620 | 5% | 1/10W |
| R261 | 1-216-044-00 | METAL CHIP | 620 | 5% | 1/10W |
| R262 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W (495,L40,L50,X5) |
| R262 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R263 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W (495,L40,L50,X5) |
| R263 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R264 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W (495,L40,L50,X5) |
| R264 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R265 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W (495,L40,L50,X5) |
| R265 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R266 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R266 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W (495,L40,L50,X5) |
| R267 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R268 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R269 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R270 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R271 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R272 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R273 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R274 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R275 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R276 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R301 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W (495,L40,L50,X5) |
| R301 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R302 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R303 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W (495,L40,L50,X5) |
| R304 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W (495,L50,X5) |
| R305 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W (495,L40,L50,X5) |
| R306 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R307 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R308 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W (495,L50,X5) |
| R309 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |

| Ref No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| R310 | 1-216-129-00 | METAL CHIP | 2.2M | 5% | 1/10W |
| R311 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R312 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R313 | 1-216-109-00 | METAL CHIP | 330K | 5% | 1/10W |
| R314 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W |
| R315 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R316 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R317 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R318 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R319 | 1-216-043-91 | METAL GLAZE | 560 | 5% | 1/10W (495,L40,L50,X5) |
| R319 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R320 | 1-216-047-91 | METAL GLAZE | 820 | 5% | 1/10W |
| R321 | 1-216-017-91 | METAL GLAZE | 47 | 5% | 1/10W |
| R322 | 1-216-063-91 | METAL GLAZE | 3.9K | 5% | 1/10W |
| R323 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W |
| R324 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W |
| R341 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R342 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R343 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R344 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R345 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R346 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R347 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R350 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R351 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R356 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R361 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R362 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R363 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R364 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R365 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R366 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R367 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R368 | 1-216-133-00 | METAL CHIP | 3.3M | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R369 | 1-216-689-11 | METAL CHIP | 39K | 0.5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R370 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R371 | 1-216-689-11 | METAL CHIP | 39K | 0.5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R372 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R373 | 1-216-689-11 | METAL CHIP | 39K | 0.5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |
| R374 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) |

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| R375 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R376 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R377 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R378 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R379 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R380 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R381 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R382 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R383 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R386 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R387 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R388 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R401 | 1-249-407-11 | CARBON | 150 | 5% | 1/4W F |
| R405 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R406 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R407 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R408 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R409 | 1-216-013-00 | METAL CHIP | 33 | 5% | 1/10W |
| R410 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R411 | 1-216-013-00 | METAL CHIP | 33 | 5% | 1/10W |
| R412 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R413 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R414 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R415 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R417 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R418 | 1-216-057-00 | METAL CHIP | 2 2K | 5% | 1/10W |
| R419 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R420 | 1-216-059-00 | METAL CHIP | 2 7K | 5% | 1/10W |
| R421 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R422 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R423 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R424 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R425 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R426 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R440 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R441 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| | | | (495 675HF,676HF,685HF,695HF) | | |
| R442 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| | | | (495 675HF,676HF,685HF,695HF) | | |
| R445 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | | | | (L50,L70HF,X5) |
| R446 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| | | | | | (L50,L70HF,X5) |
| R447 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| | | | | | (L50,L70HF,X5) |
| R448 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R462 | 1-216-105-91 | METAL GLAZE | 220K | 5% | 1/10W |
| R463 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R464 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R502 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remarks |
|---|---|---|---|---|---|
| R503 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R504 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W |
| R505 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R506 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R507 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| R540 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R541 | 1-249-407-11 | CARBON | 150 | 5% | 1/4W F |
| R543 | 1-249-408-11 | CARBON | 180 | 5% | 1/4W F |
| R544 | 1-216-025-91 | METAL GLAZE | 100 | 5% | 1/10W |
| R560 | 1-216-022-00 | METAL CHIP | 75 | 5% | 1/10W |
| R570 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R571 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R572 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| R573 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R574 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| R575 | 1-216-097-91 | METAL GLAZE | 100K | 5% | 1/10W |
| R600 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W F |
| R601 | 1-216-430-11 | METAL OXIDE | 390 | 5% | 1W F |
| R602 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R603 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R604 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W F |
| R605 | 1-215-857-11 | METAL OXIDE | 10 | 5% | 1W F |
| R606 | 1-215-908-00 | METAL OXIDE | 33 | 5% | 3W F |
| R608 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W F |
| R609 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W F |
| R610 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W F |
| R701 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R702 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| ⚠R705 | 1-212-893-00 | FUSIBLE | 330 | 5% | 1/4W F |
| R706 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R708 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R712 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R731 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R732 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R733 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R734 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R735 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R736 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| | | | | | (495,L40,L50,X5) |
| R736 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R737 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R738 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R739 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R740 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R741 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |
| R742 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | | | |

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Replace only with part number specified.

**Note :**
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Ne les remplacer que par une pièce portant le numéro spécifié

| Ref. No. | Part No. | Description | Remarks |
|---|---|---|---|
| R747 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| R980 | 1-216-295-00 | METAL CHIP 0 5% 1/10W (495,685HF,695HF) | |
| | | < VARIABLE RESISTOR > | |
| RV731 | 1-241-766-11 | RES, ADJ, CERMET 47K (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| | | < SWITCH > | |
| S100 | 1-570-953-11 | SWITCH, PUSH (1 KEY)(REC PROOF) | |
| S401 | 1-571-532-32 | SWITCH, TACTIL (POWER) | |
| S402 | 1-571-532-32 | SWITCH, TACTIL (EJECT) | |
| S403 | 1-571-532-32 | SWITCH, TACTIL (REC) | |
| S404 | 1-571-532-32 | SWITCH, TACTIL (PAUSE) | |
| S405 | 1-571-532-32 | SWITCH, TACTIL (CH +) | |
| S406 | 1-571-532-32 | SWITCH, TACTIL (CH -) | |
| S412 | 1-571-532-32 | SWITCH, TACTIL (EASY SET UP) (495 675HF,676HF,685HF,695HF) | |
| S701 | 1-571-588-11 | SWITCH, SLIDE (3CH/4CH) | |
| | | < TRANSFORMER > | |
| T321 | 1-431-097-11 | TRANSFORMER, BIAS OSCILLATION | |
| | | < TUNER > | |
| TU701 | 1-693-353-11 | TUNER, (IF) SOLID TYPE (495,L40,L50,X5) | |
| TU701 | 1-XXX-XXX-XX | TUNER, (IF) SOLID TYPE (675HF,676HF,685HF,695HFL60HF,L70HF,X6HF) | |
| | | < VIBRATOR > | |
| X160 | 1-760-494-11 | VIBRATOR, CRYSTAL 16MHz | |
| X161 | 1-579-463-11 | VIBRATOR, CRYSTAL 32.768kHz | |
| X202 | 1-577-380-11 | VIBRATOR, CRYSTAL 3.579545MHz | |
| X501 | 1-567-307-11 | OSCILLATOR, CRYSTAL | |
| ⚠ | 1-468-168-11 | POWER BLOCK SR701 (EXCEPT CHILEAN,PX) ********** (Ref.No.:5,000 Series) | |
| | | < CAPACITOR > | |
| C101 | 9-902-834-01 | METALIZED 0.1uF 250V | |
| C108 | 9-980-070-01 | ELECT 120uF 200V | |
| C109 | 1-126-963-11 | ELECT 4.7uF 50V | |
| C114 | 1-130-491-51 | FILM 0.047uF 50V | |
| C202 | 1-126-967-11 | ELECT 47uF 50V | |
| C203 | 1-126-183-11 | ELECT 1000uF 16V | |
| C204 | 1-126-935-11 | ELECT 470uF 16V | |
| C205 | 1-126-797-11 | ELECT 1000uF 10V | |
| C206 | 1-126-935-11 | ELECT 470uF 16V | |
| C207 | 1-126-933-11 | ELECT 100uF 16V | |
| C208 | 1-126-960-11 | ELECT 1uF 50V | |
| | | < DIODE > | |
| D101 | 8-719-047-70 | DIODE 1A4 | |
| D102 | 8-719-047-70 | DIODE 1A4 | |
| D103 | 8-719-047-70 | DIODE 1A4 | |
| D104 | 8-719-047-70 | DIODE 1A4 | |

| Ref. No | Part No. | Description | Remarks |
|---|---|---|---|
| D105 | 8-719-054-32 | DIODE ERA15-06 | |
| D106 | 8-719-058-91 | DIODE AG01A | |
| D107 | 8-719-920-32 | DIODE ERA15-02 | |
| D108 | 8-719-911-19 | DIODE 1SS119 | |
| D109 | 8-719-109-61 | DIODE RD30ES | |
| D201 | 9-900-535-01 | DIODE AU02Z | |
| D202 | 8-719-052-52 | DIODE 31DF2-FC5 | |
| D203 | 8-719-018-83 | DIODE D2S4M | |
| D204 | 9-900-535-01 | DIODE AU02Z | |
| D205 | 8-719-160-62 | DIODE RD15FB2 | |
| | | < FUSE > | |
| ⚠F101 | 1-533-296-11 | FUSE, | |
| | | < IC > | |
| ⚠IC201 | 8-759-420-19 | IC AN1431T | |
| | | < COIL > | |
| L101 | 1-403-598-11 | LINE FILTER | |
| | | < PHOTOCOUPLER > | |
| ⚠PC101 | 8-719-018-29 | PHOTOCOUPLER ON3131 | |
| | | < TRANSISTOR > | |
| Q101 | 8-729-904-98 | TRANSISTOR 2SC4054 | |
| Q102 | 8-729-012-31 | TRANSISTOR 2SC4040Q | |
| | | < RESISTOR > | |
| R108 | 1-260-314-51 | CARBON 68 1/2W | |
| R109 | 1-260-314-51 | CARBON 68 1/2W | |
| R110 | 1-244-867-11 | CARBON 560 1/4W | |
| R110 | 1-244-868-11 | CARBON | |
| R110 | 1-244-869-11 | CARBON | |
| R110 | 1-244-870-11 | CARBON | |
| R110 | 1-244-871-11 | CARBON | |
| ⚠ | 1-468-169-11 | POWER BLOCK HS-821SF (CHILEAN,PX) ********** (Ref.No.:6,000 Series) | |
| | | < CAPACITOR > | |
| C108 | 9-980-072-01 | ELECT 150uF 400V | |
| C112 | 1-107-882-11 | ELECT 100uF 16V | |
| C201 | 1-126-967-11 | ELECT 47uF 50V | |
| C202 | 1-111-040-11 | ELECT 820uF 16V | |
| C203 | 1-126-936-11 | ELECT 470uF 16V | |
| C204 | 9-980-071-01 | ELECT 1000uF 10V | |
| C205 | 1-126-925-11 | ELECT 470uF 10V | |
| C206 | 1-104-661-11 | ELECT 330uF 16V | |
| C207 | 1-126-960-11 | ELECT 1uF 50V | |
| C212 | 1-126-964-11 | ELECT 10uF 50V | |

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Ne les remplacer que par une pièce portant le numéro spécifié.

# POWER BLOCK

| Ref. No. | Part No. | Description | | Remarks |
|---|---|---|---|---|
| | | < DIODE > | | |
| D101 | 8-719-510-88 | DIODE | S1WBA60 | |
| D102 | 8-719-312-16 | DIODE | EG01 | |
| D104 | 9-980-073-01 | DIODE | 1SS270A | |
| D106 | 8-719-110-30 | DIODE | RD12S | |
| D201 | 8-719-052-89 | DIODE | D1NL40 | |
| D202 | 8-719-018-25 | DIODE | D2L20U | |
| D203 | 8-719-018-83 | DIODE | D2S4M | |
| D204 | 8-719-026-52 | DIODE | 10ELS2 | |
| ⚠D205 | 8-719-160-68 | DIODE | RD18FB | |
| | | < FUSE > | | |
| ⚠F101 | 1-532-203-11 | FUSE | 2A 250V | |
| | | < IC > | | |
| ⚠IC101 | 9-939-634-01 | IC | MIP164 | |
| ⚠IC201 | 8-759-420-19 | IC | AN1431T | |
| | | < PHOTOCOUPLER > | | |
| ⚠PC101 | 8-749-924-84 | PHOTOCOUPLER | PS2561 | |
| | | MISCELLANEOUS | | |
| | | ********** | | |
| ⚠11 | 1-762-844-21 | SWITCH, ROTARY (L50, L70HF, X5) | | |
| ⚠58 | 1-468-168-11 | POWER BLOCK SR701(EXCEPT Chilean, PX) | | |
| ⚠58 | 1-468-169-11 | POWER BLOCK HS-821SF (Chilean, PX) | | |
| ⚠9 | 1-777-851-21 | CORD, POWER(US, Canadian) | | |
| ⚠9 | 1-777-854-21 | CORD, POWER(Mexican, Panamanian) | | |
| ⚠9 | 1-777-857-21 | CORD, POWER(Chilean, PX) | | |

| Ref No. | Part No | Description | Remarks |
|---|---|---|---|
| | | ACCESSORIES & PACKING MATERIALS | |
| | | ********** | |
| | 1-575-334-11 | CORD, CONNECTION (FOR AUDIO/VIDEO)(1 5m) | |
| | 1-696-592-11 | CORD, CONNECTION (NTSC)(FOR RF)(1.5m) | |
| | 1-769-181-41 | MOUSE, INTERIJENT CABLE (495, 695HF) | |
| | 3-856-995-11 | MANUAL, INSTRUCTION (ENGLISH) (675HF,676HF) | |
| | 3-856-995-21 | MANUAL, INSTRUCTION (FRENCH) (675HF:Canadian) | |
| | 3-858-077-11 | MANUAL, INSTRUCTION (SPANISH) (L50, L70HF, X5) | |
| | 3-858-382-11 | MANUAL, INSTRUCTION (SPANISH)(L40) | |
| | 3-858-384-11 | MANUAL, INSTRUCTION (SPANISH) (L60HF, X6HF) | |
| | 3-858-385-11 | MANUAL, INSTRUCTION (ENGLISH)(495) | |
| | 3-858-385-21 | MANUAL, INSTRUCTION (FRENCH) (495:Canadian) | |
| | 3-858-386-11 | MANUAL, INSTRUCTION (ENGLISH)(695HF) | |
| | 3-858-386-21 | MANUAL, INSTRUCTION (FRENCH) (695HF Canadian) | |
| | 3-859-040-11 | MANUAL, INSTRUCTION (ENGLISH)(685HF) | |
| * | 3-961-581-01 | SHEET, PROTECTION | |
| * | 3-972-522-01 | INDIVIDUAL CARTON (675HF) | |
| * | 3-972-522-11 | INDIVIDUAL CARTON (695HF) | |
| * | 3-972-522-21 | INDIVIDUAL CARTON (495) | |
| * | 3-972-522-31 | INDIVIDUAL CARTON (676HF) | |
| * | 3-972-522-41 | INDIVIDUAL CARTON (685HF) | |
| * | 3-972-523-01 | CUSHION | |
| * | 3-972-525-01 | SPACER | |
| * | 3-973-678-02 | INDIVIDUAL CARTON (L40) | |
| * | 3-973-678-12 | INDIVIDUAL CARTON (L50) | |
| * | 3-973-678-22 | INDIVIDUAL CARTON (L70HF) | |
| * | 3-973-678-32 | INDIVIDUAL CARTON (L60HF) | |
| * | 3-973-678-42 | INDIVIDUAL CARTON (X6HF) | |
| * | 3-973-678-52 | INDIVIDUAL CARTON (X5) | |
| | | ********** | |
| | | HARDWARE LIST | |
| | | ********** | |
| #1 | 7-682-547-04 | SCREW +P 3X6 | |
| #2 | 7-685-646-79 | SCREW (3X8) | |
| #5 | 7-624-190-61 | STOP RING 2 4, TYPE-CS | |
| #6 | 7-628-254-10 | SCREW +PS2.6X6 | |
| #7 | 7-624-106-04 | STOP RING 3.0, TYPE-E | |
| #8 | 7-682-645-01 | SCREW +PS3X4 | |

| | |
|---|---|
| **Note :**<br>The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety<br>Replace only with part number specified | **Note :**<br>Les composants identifiés par une marque ⚠ sont critiques pour la sécurité<br>Ne les remplacer que par une pièce portant le numéro spécifie. |

# SECTION 6
# INTERFACE, IC PIN FUNCTION DESCRIPTION

## 6-1. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-289 board IC160)

| Signal | Pin No. | I/O | EJECTED | CASSETTE LOARDING | CASSETTE UNLOARDING | TAPE THREADING | TAPE UNTEREADING | STOP | FF | REW | PB | REC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CW | MA-289 Board IC160 ㊽ | O | *5 | H | L | H | L | *5 | *5 | *5 | *5 | *5 |
| CAM | MA-289 Board IC160 ㊼ | O | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 |
| MODE 1 | MA-289 Board IC160 ㉙ | I | — | — | — | — | — | H | H | H | H | H |
| MODE 2 | MA-289 Board IC160 ㉘ | I | — | — | — | — | — | L | L | L | H | H |
| MODE 3 | MA-289 Board IC160 ㉗ | I | — | — | — | — | — | H | H | H | L | L |
| MODE 4 | MA-289 Board IC160 ㉖ | I | — | — | — | — | — | H | L | L | L | L |
| REC PRF | MA-289 Board IC160 ㉚ | I | L | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 |
| T REEL | MA-289 Board IC160 ㉛ | I | H/L | H/L | H/L | H/L | H/L | H/L | *2 | *2 | *2 | *2 |
| S REEL | MA-289 Board IC160 ㉙ | I | H/L | H/L | H/L | *2 | *2 | H/L | *2 | *2 | *2 | *2 |
| END LED | MA-289 Board IC160 ⑳ | O | L | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| T SENS | MA-289 Board IC160 ⑦ | I | *3 | *3 | *3 | *4 | *4 | *4 | *4 | *4 | *4 | *4 |
| S SENS | MA-289 Board IC160 ⑥ | I | *3 | *3 | *3 | *4 | *4 | *4 | *4 | *4 | *4 | *4 |

*1. "L" When erasing protection tab is bent. "H" when not bent.
*2. Pulse of period in proportion to reel rotating speed.
*3. Approx. 2 msec period "H" pulse when tape top or end is detected.
*4. Normally "L". 2 msec period "H" pulse when tape top or end is detected.
*5. Hi-Z

## 6-2. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-289 board IC160)

| Signal | Pin No. | I/O | STOP | FF | REW | TAPE THREADING | TAPE UNTHREADING | PB | REC |
|---|---|---|---|---|---|---|---|---|---|
| CTL IN+ | MA-289 Board IC160 ㉒ | O | *7 | *7 | *7 | *7 | *7 | *7 | *1 |
| DRUM PG | MA-289 Board IC160 ㊽ | I | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| DRUM FG | MA-289 Board IC160 ㊼ | I | *4 | *4 | *4 | *4 | *4 | *4 | *4 |
| CAP FG | MA-289 Board IC160 ㉕ | I | H/L | *2 | *2 | *5 | *5 | *2 | *2 |
| CAP REV | MA-289 Board IC160 ⑯ | O | H/L | L | H | L | H | L | L |
| CAP ERR | MA-289 Board IC160 ⑰ | O | L | *6 | *6 | *6 | *6 | *6 | *6 |
| DRUM ERR | MA-289 Board IC160 ⑱ | O | *6 | *6 | *6 | *6 | *6 | *6 | *6 |

*1. 30 Hz pulse
*2. Pulse of period in propotion to tape speed.
*3. 30 Hz "H" pulse.
*4. 720 Hz pulse.
*5. Unstable period pulse.
*6. DC voltage 1 ~ 5V.
*7. Hi-Z (2.5V).

## 6-3. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-289 board IC160)

| Signal | Pin No. | I/O | I/O level |
|---|---|---|---|
| RESET | MA-289 Board IC160 ㊸ | I | Normally "H". "L" when service interruption detected or restored. |
| 12C DATA1 | MA-289 Board IC160 ㉒ | I/O | Serial communication data to audio microprocessor. |
| 12C CLOCK1 | MA-289 Board IC160 ⑰ | O | Serial communication clock to audio microprocessor. |
| 12C DATA VIDEO | MA-289 Board IC160 ㊷ | I/O | Serial communication data to video microprocessor. |
| 12C CLOCK VIDEO | MA-289 Board IC160 ㊶ | O | Serial communication clock to video microprocessor. |
| (RP) S OUT1 | MA-289 Board IC160 ㊺ | I/O | Serial communication data to RP microprocessor |
| (RP) S CLK1 | MA-289 Board IC160 ㊼ | O | Serial communication clock to RP microprocessor. |

## 6-4. SYSTEM CONTROL AND RF MODULATOR — INPUT SELECTION BLOCK INTERFACE (MA-289 board IC501)

| Signal | Pin No. | I/O | I/O level |
|---|---|---|---|
| ANT SEL | MA-289 Board IC160 ㉑ | O | "L" when RF modulator through. |

## 6-5. SYSTEM CONTROL — VIDEO/RP BLOCK INTERFACE (MA-289 board IC160)

| Signal | Pin No. | I/O | STOP/FF /REW | TAPE LOADING | TAPE UNLOADING | PB | REC | REC PAUSE |
|---|---|---|---|---|---|---|---|---|
| RF SWP | MA-289 Board IC160 ⑱ | O | *1 | *1 | *1 | *1 | *1 | *1 |
| QVD | MA-289 Board IC160 ⑬ | O | L | L | L | *2 | L | L |
| REC P | MA-289 Board IC160 ㊾ | O | L | L | L | L | L | H |
| C SYNC | MA-289 Board IC160 ㊹ | I | *3 | *3 | *3 | *3 | *3 | *3 |

*1. Synchronized with drum rocation. 30Hz 50% duty pulse.
*2. Normal "L". "H" when video signal is not rgenerated.
*3. Composite sync signal (positive).

## 6-6. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-289 board IC160)

| Signal | Pin No. | I/O | STOP/FF /REW | TAPE LOADING | TAPE UNLOADING | PB | REC | REC PAUSE |
|---|---|---|---|---|---|---|---|---|
| A MUTE | MA-289 Board IC160 ㊽ | O | L | L | L | L | L | H |

## 6-7. SERVO/SYSTEM CONTROL MICROPROCESSOR (MA-289 BOARD IC160)

| Pin.No. | Signal | I/O | Function |
|---|---|---|---|
| 1 | — | — | — |
| 2 | — | — | — |
| 3 | TU AFT | I | Tuner analog AFT input |
| 4 | FUNC KEY 2 | I | 9 key input |
| 5 | FUNC KEY 1 | I | 9 key input |
| 6 | SSENS | I | Tape end sensor |
| 7 | TSENS | I | Tape top sensor |
| 8 | VIDEO RF | I | Video RF input |
| 9 | AF ENV | I | HiFi envelope |
| 10 | — | — | — |
| 11 | — | — | — |
| 12 | STEREO | I | Tuner stereo detection input L Stereo |
| 13 | QVD | O | Quasi VD |
| 14 | REMOCON | I | Infrared ray catcher |
| 15 | F MONO | O | Forced mono |
| 16 | CAP RVS | O | Capstan reverse |
| 17 | I2C CLOCK 1 | O | I2C clock (EEPROM, HiFi, PLL MOD) |
| 18 | RF SWP | O | RF switching pulse |
| 19 | AF SWP | O | HiFi switching pulse |
| 20 | END LED | O | End sensor LED output |
| 21 | ANT SEL | O | TV/VTR RF modulator |
| 22 | PLL DATA | I/O | Tuner PLL data (TU)/I2C data (EEPROM, HiFi, PLL MOD) |
| 23 | PLL CLK | O | Tuner PLL clock |
| 24 | T ENABLE | O | Tuner enable |
| 25 | SAP | I | SAP discrimination |
| 26 | MODE 4 | I | Cam encoding data 4 |
| 27 | MODE 3 | I | Cam encoding data 3 |
| 28 | MODE 2 | I | Cam encoding data 2 |
| 29 | MODE 1 | I | Cam encoding data 1 |
| 30 | RECPRF | I | Mis-record prevention switch signal input |
| 31 | DEST1 | I | Destination discrimination input 1 |
| 32 | DEST2 | I | Destination discrimination input 2 |
| 33 | DEST3 | I | Destination discrimination input 3 |
| 34 | NUB | I | Ground |
| 35 | NUA | I | Ground |
| 36 | CLKSEL | I | 5V |
| 37 | VCC | I | 5V |
| 38 | XIN | I | 16MHz |
| 39 | XOUT | O | 16MHz |
| 40 | VSS | I | Ground |
| 41 | XCIN | I | 32kHz |
| 42 | XCOUT | O | 32kHz |
| 43 | RESET | I | Reset signal input |
| 44 | NT JUDGE | I | L. NTSC |
| 45 | — | — | — |
| 46 | CBC ON | O | Cable box control signal output |
| 47 | VMUTE | O | Video-mute for EDS |
| 48 | AMUTE | O | Audio mute |
| 49 | REC P | O | HiFi audio record control |
| 50 | VPB | O | Audio record control L. Playback |

| Pin.No. | Signal | I/O | Function |
|---|---|---|---|
| 51 | I2C CLOCK VI | O | I2C clock (Video) |
| 52 | I2C DATA VI | O | I2C data (Video) |
| 53 | TA MUTE | O | Tuner-audio mute |
| 54 | DMS UP | I | DMS control |
| 55 | DMS DOWN | I | DMS control |
| 56 | P CONT M12 | O | Motor 12V control |
| 57 | CAM | I/O | Cam motor control 1 |
| 58 | CW | I/O | Cam motor control 2 |
| 59 | P CONT SW12 | O | SW 12V control |
| 60 | — | — | — |
| 61 | — | — | — |
| 62 | — | — | — |
| 63 | — | — | — |
| 64 | OSD CS | O | OSD chip select |
| 65 | SOUT 1 | O | Serial out Ch1 (RP) |
| 66 | FLD CS | O | Fluorescent display driver chip select |
| 67 | SCLK 1 | O | Serial clock Ch1 (RP) |
| 68 | SOUT 0 | O | Serial out Ch0 (FLD, OSD) |
| 69 | SIN 0 | I | Serial in Ch0 (FLD, OSD) |
| 70 | SCLK 0 | O | Serial clock Ch0 (FLD, OSD) |
| 71 | — | — | — |
| 72 | BUZZER | I/O | Buzzer |
| 73 | SIRCS OUT | O | Remote control signal output (CBC) |
| 74 | MAIN/SAP | O | MAIN/SAP select |
| 75 | PFAIL | I | Power fail detection input |
| 76 | T-OUT | O | Timing-out |
| 77 | CAP ERR | O | Capstan error output |
| 78 | DRUM ERR | O | Drum error output |
| 79 | SREEL | I | Supply reel sensor |
| 80 | TREEL | I | Take-up reel sensor |
| 81 | — | — | — |
| 82 | CHECK | I | Check input |
| 83 | — | — | — |
| 84 | CSYNC | I | Composite sync signal input |
| 85 | CAPFG | I | Capstan FG signal input |
| 86 | DRMPG | I | Drum PG signal input |
| 87 | DRMFG | I | Drum FG signal input |
| 88 | AMP VSS | I | CTL amp |
| 89 | AMP VREF OUT | O | CTL amp |
| 90 | AMP VREF IN | I | CTL amp |
| 91 | CTLIN- | I/O | CTL signal I/O |
| 92 | CTLIN+ | I/O | CTL signal I/O |
| 93 | CTL SWOUT | O | CTL amp |
| 94 | CTL AMP IN | I | CTL amp |
| 95 | AMPC | I | CTL amp |
| 96 | CTL VSS | I | CTL amp |
| 97 | CTL AMP OUT | O | CTL amp |
| 98 | AMPVCC | I | CTL amp |
| 99 | AVCC | I | AN5V |
| 100 | CTL GAIN | O | CTL gain adjustment |

# SECTION 7
# ADJUSTMENTS

## 7-1 MECHANICAL ADJUSTMENTS

For the mechanical adjustments, please refer to the "VHS MECHANICAL ADJUSTMENT MANUAL IV (H MECHANISM)" (9-973-623-11).

## 7-2. ELECTRICAL ADJUSTMENTS

See the adjusting part location diagram from on page 7-8 for the adjustment.

### 2-1. PREPARATION BEFORE ADJUSTMENT

#### 2-1-1. Equipment Required

The measuring instruments used for this alignment include:

1) Monitor TV
2) Oscilloscope, dual-trace, bandwidth of 30MHz or more, with delay mode (A probe 10:1 should be used unless otherwise specified.)
3) Frequency counter
4) Pattern generator
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Alignment tapes
    KRV-51N2 Part No. : 8-192-605-32

#### 2-1-2. Equipment Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

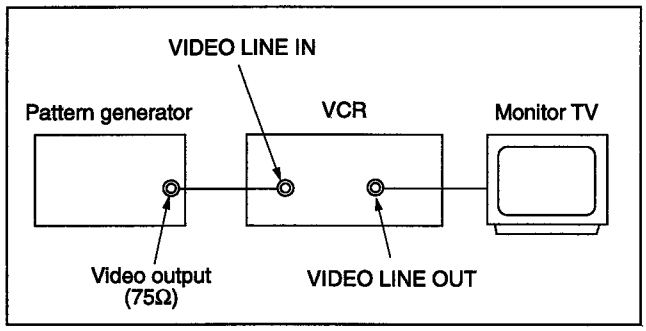



Fig. 7-2-1.

#### 2-1-3. Input Signal Check

Video signal produced by a pattern generator is used as an adjustment signal to perform electrical alignment for this unit. This video signal must satisfy the specification.

Unless otherwise specified, place the switches and controls of this unit in the following positions:

- CHANNEL switch ..... LINE

Connect an oscilloscope to the Video Input terminal. Check that the synchronizing signal of the Y signal has an amplitude of approximately 0.7V and that the burst signal has an amplitude of approximately 0.3V and its waveform is flat. And check that the level ratio of burst signal to "red" signal is 0.30 : 0.66. The video signal (color bar) used for electrical aligning this unit is shown in Fig. 7-2-2.

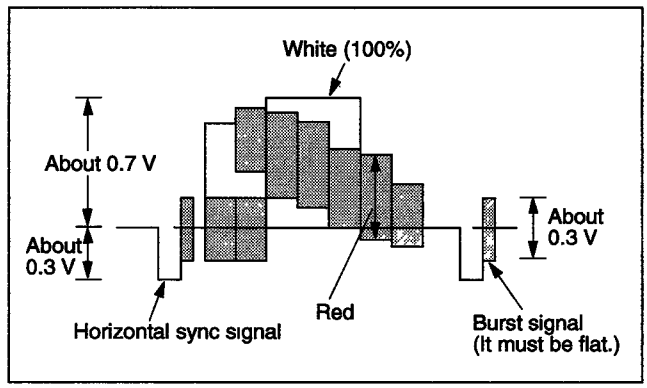



Fig. 7-2-2. Color Bar Signals of Pattern Generator

#### 2-1-4. Alignment Tape

• Contents of KRV-51N2

| | Mode | Period | Video signal | Audio signal | |
|---|---|---|---|---|---|
| | | | | Hi-Fi | Normal |
| 1 | SP | 7 minutes | Color bar | 400Hz | 400Hz |
| 2 | | 3 minutes | Monoscope | | |
| 3 | EP | 7 minutes | Color bar | | |
| 4 | | 3 minutes | Monoscope | | |

### 2-1-5. Input/Output Levels and Impedance

Video input: LINE IN
(phone jack) (1)
Input signal: 1Vp-p, 75ohms, unbalanced, sync negative

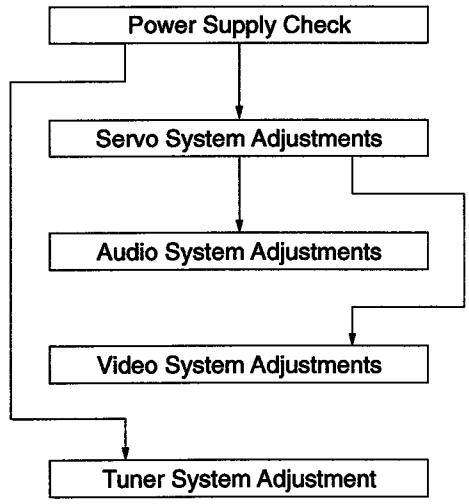
Video output: LINE OUT
(phone jack) (1)
Output signal: 1Vp-p, 75ohms, unbalanced, sync negative

Audio input: LINE IN
(phone jack) (1 : Monaural, 2 : Stereo)
Input level: –7.5 dBs
(0dBs= 0.775Vrms)
Input impedance: more than 47 kilohms

Audio output: LINE OUT
(phone jack) (1 : Monaural, 2 : Stereo)
Standard level: –7.5dBs at load impedance 47 kilohms
Output impedance: less than 10 kilohms

### 2-1-6. Adjustment Sequence

The adjustments should be performed in the following sequence.




## 2-2. POWER SUPPLY CHECK

### 2-2-1. Output Voltage Check (MA-289 Board)

| | |
|---|---|
| Mode | E-E |
| Measuring Instrument | Digital voltmeter |
| SW 12V Check | |
| Measurement point | IC600 pin ② |
| Specified value | 12.0 ± 0.3V |
| MTR12V Check | |
| Measurement point | D600 cathode |
| Specified value | 12.4 ± 1.0V |
| SW5V Check | |
| Measurement point | Q602 emitter |
| Specified value | 5.1 ± 0.2Vdc |
| D5V Check | |
| Measurement point | D161 cathode |
| Specified value | 5.1 ± 0.3V |

**[Check Method]**

1) Each of these supply voltages must meet its specified value.

## 2-3. SERVO SYSTEM CHECK

Unless otherwise specified, set the switches to the following positions.

- CHANNEL switch ..... LINE
- TAPE SPEED switch ..... SP

### 2-3-1. RF Switching Position Adjustment (MA-289 Board)

**[Adjustment Purpose]**

To adjust the link of the A-ch and B-ch of the tape playback outputs. To make the unit compatible with other tapes and units. If this specification is not satisfied, the link will appear on the screen and the screen will be disrupted, etc.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape: SP color bar portion |
| Measurement point | CH1: Video LINE OUT terminal<br>CH2: CN261 pin ③ (RF SWP) |
| Measuring instrument | Oscilloscope |
| Specified value | 6.5 ± 0.5H (410 ± 32 µsec) |

**[Adjustment Method]**

1) Short-circuit between JS401 and ground on MA-289 board for about 1 second to activate the RF switching position adjustment mode.
2) Check that "ADJ" is indicated on FL display.
3) Using the channel + and – buttons, adjust to 410 ± 32µsec (6.5 ± 0.5H).
4) Press the PAUSE button.
5) Press the EJECT button.

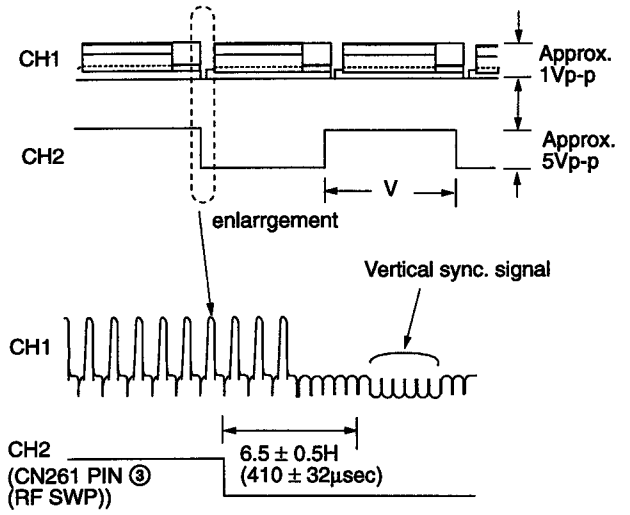



Fig. 7-2-3.

## 2-4. VIDEO SYSTEM CHECKS

For the video system checks, follow the checking procedures given below as a rule. The color bar video signal supplied from the pattern generator is used as the video input signal for the video system adjustment of the recording mode. Check that the signal satisfies the specified value designated in the "Check of input signal" (Fig. 7-2-2)

Unless otherwise specified, set the switches to the following positions.

- CHANNEL switch ..... LINE
- TAPE SPEED switch ..... SP

**[Checking Sequence]**

1) X'tal OSC Check
2) SYNC AGC Check
3) White clip/Dark clip Check
4) Recording Y Level Check
5) Recording Chroma Level Check
6) Playback Level Check

### 2-4-1. X'tal OSC Check (MA-289 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape: SP Color bar portion |
| Measurement point | IC201 pin ㊽ |
| Measuring instrument | Oscilloscope and Frequency counter |
| Specified value | 3,579,545 ± 70Hz |

Note: A frequency counter should be connected through a buffer amplifier (oscilloscope, etc.) having a high impedance and a low capacitance.

**[Check Method]**

1) Check that the oscillation frequency satisfies the specified value and that the oscillation voltage is 450 ± 200mVp-p.

3,579,545 ± 70Hz

Fig. 7-2-4.

### 2-4-2. SYNC AGC Check (MA-289 Board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement point | Video LINE OUT terminal |
| Measuring instrument | Oscilloscope |
| Specified value | A=1.00 ± 0.05Vp-p (75Ω terminated) |

**[Check Method]**

1) Check that the Video signal level (A) satisfies the specified value.

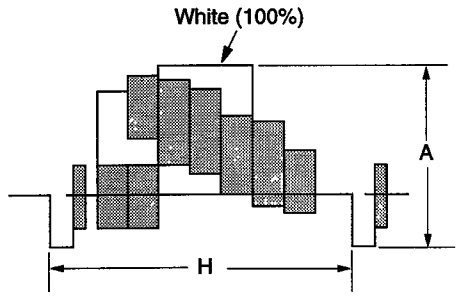



Fig. 7-2-5.

### 2-4-3. White Clip/Dark Clip Check (MA-289 Board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement point | IC201 pin ㊲ |
| Measuring instrument | Oscilloscope |
| Specified value | White clip: 190 ± 15%<br>Dark clip: 50 ± 10% |

**[Check Method]**

1) Check that the white clip level is 190 ± 15% to the white (100%) level.
2) Check that the dark chip level is 50 ± 10% to the white (100%) level.

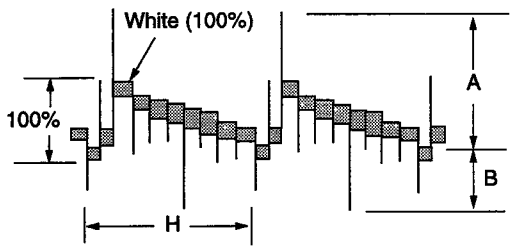



Fig. 7-2-6.

### 2-4-4. Recording Y Level Check (MA-289 Board)

| | |
|---|---|
| Mode | E-E |
| Signal | No-signal |
| Measurement point | IC201 pin ⑱ |
| Measuring instrument | Oscilloscope |
| Specified value | A=320mV |

**[Check Method]**

1) Check that the recording RF signal satisfies the specified value.

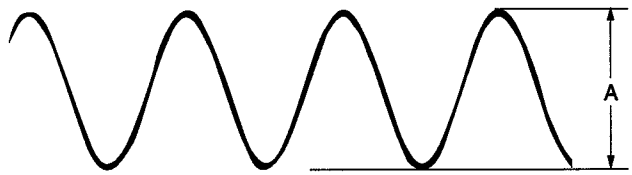



Fig. 7-2-7.

### 2-4-5. Recording Chroma Level Check (MA-289 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bar |
| Measurement point | IC201 pin ⑭ |
| Measuring instrument | Oscilloscope |
| Specified value | A=380 ± 40mV |

**[Check Method]**

1) Confirm the amplitude of recording chroma level becomes the specified value.

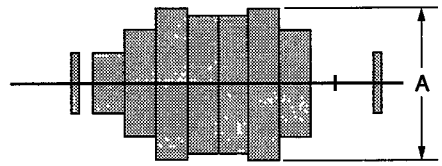



Fig. 7-2-8.

### 2-4-6. Playback Level Check (MA-289 Board)

| | |
|---|---|
| Mode | Playback |
| Signal Alignment | Tape: SP mode color bar portion |
| Measurement point | Video LINE OUT terminal |
| Measuring instrument | Oscilloscope |
| Specified value | A=1.00 ± 0.02Vp-p (75Ω terminated) |

**[Check Method]**

1) Check that the playback level satisfies the specified value.

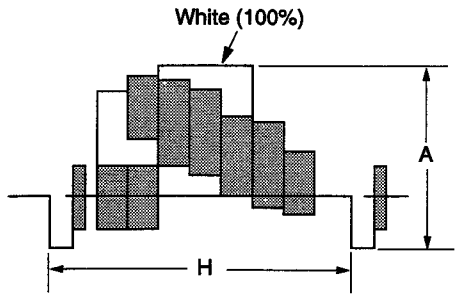



Fig. 7-2-9.

## 2-5. AUDIO SYSTEM ADJUSTMENT

- For the adjustment of the audio system, perform in the SP mode if there is no special notes. Use the alignment tape.
- Adjust both L-CH and R-CH (SLV-675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF).

**[Connecting Instruments]**

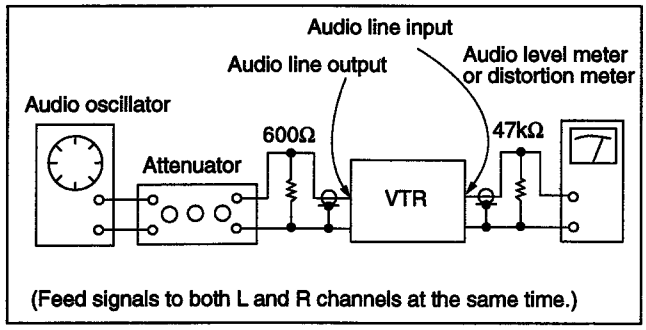



Fig. 7-2-10.

- Hi-Fi Audio System Adjustment (SLV-675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF)

Perform the adjustment setting the switches and controls on the following positions if there is no special indications.

- [CHANNEL] switch ..... LINE
- [CHANNEL] switch ..... ON *1)
- [TAPE SPEED] switch ..... SP *1)

*1) Set by remote commander

### 2-5-1. AF Switching Position Adjustment (MA-289 Board)

**[Adjustment purpose]**

To adjust the link of the A-ch and B-ch of the tape playback outputs. If this specification is not satisfied, the noise will increase and cracking sounds will be produced.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape: SP color bar portion |
| Measurement point | CH1: CN341 pin ① (AF ADJ)<br>CH2: CN261 pin ③ (RF SWP) |
| Measuring instrument | Oscilloscope |
| Specified value | No dropouts in the RF signal |

**[Adjustment Method]**

1) Short-circuit between JS401 and ground on MA-289 board for about 1 second to activate the RF switching position adjustment mode.
2) Check that "ADJ" is indicated on FL display.
3) Press the REC button to activate the AF switching position adjustment mode.
4) Using the channel + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
5) Press the PAUSE button.
6) Press the EJECT button TAPE SPEED

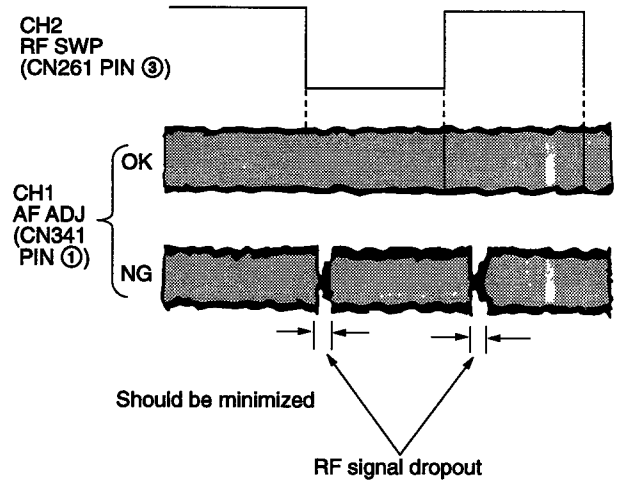



Fig. 6-2-11.

- Normal Audio System Adjustment
- Adjust in the SP mode if there is no special indications.
- Perform the adjustment setting the switch on the following positions.

- CHANNEL switch ..... LINE
- AUTO STEREO switch ..... OFF *1

*1) Set by remote commander. (SLV-675HF/676HF/685HF/695HF/L60HF/L70HF/X6HF)

**[Adjustment Method]**

1. ACE head adjustment.....Refer to the VHS mechanical adjustment manual Ⅳ.
2. E-E output level check
3. Overall Output level and distortion factor check
4. Overall noise level check.

### 2-5-2. ACE Head Adjustment

Refer to the "VHS mechanical adjustment manual Ⅳ" (9-973-623-11).

### 2-5-3. E-E Output Level Check

| | |
|---|---|
| Mode | E-E |
| Signal | 400Hz, –7.5dBs: Audio LINE IN |
| Measurement point | Audio LINE OUT terminal |
| Measuring instrument | Audio level meter |
| Specified value | –7.5 ± 2dBs |

**[Check Method]**

1) Input signal of 400Hz and –7.5dBs to the audio input.
2) Check that the audio output level is –7.5 ± 2dBs.

### 2-5-4. Overall Output Level and Distortion Factor Check

| | |
|---|---|
| Mode | Self-record playback |
| Signal | 400Hz, –7.5dBs: Audio LINE IN |
| Measurement point | Audio LINE OUT terminal |
| Measuring instrument | Audio level meter and Distortion meter |
| Specified value | Playback Level: –7.5 ± 3dBs<br>Distortion: 4.0% or less |

**[Check Method]**

1) Input signal of 400Hz and –7.5dBs to the audio input.
2) Record signal.
3) Playback the recorded portion.
4) Check that the output level is –7.5 ± 3dBs.
5) Check that the distortion factor is 4.0% or less.

### 2-5-5. Overall Noise Level Check

| | |
|---|---|
| Mode | Self-record playback |
| Signal | No signal (Insert a shorting plug into the Audio LINE IN terminal) |
| Measurement point | Audio LINE OUT terminal |
| Measuring instrument | Audio level meter (IHF-A weighing filter is used) |
| Specified value | – 46dBs or less |

**[Check Method]**

1) Record.
2) Playback recorded portion.
3) Check that noise level is – 46dBs or less.

## 2-6. TUNER SYSTEM ADJUSTMENT

### 2-6-1. Separation Adjustment (MA-289 Board)

| | |
|---|---|
| Mode | E-E |
| Signal | RF signal<br>(Video : Color bar (100%) white modulation<br>Audio : Mono 400Hz 100% modulation<br>Electrical field: 60-80dBm/75Ω terminated) |
| Measuring instrument | Audio level meter |
| Measuring point | IC733 pin ⑫ (MPX IN) |
| Adjusting element | RV731 |
| Specified value | – 9.9 ± 0.1dbm |

**[Adjustment Method]**

1) Feed the RF signal from RF IN terminal.
2) Adjust with RV731 so that the output level satisfies the specified value.

## 2-7. ADJUSTMENT PARTS LOCATION DIAGRAM

MA-289 BOARD (CANDUCTOR SIDE)